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Exploring the Role of Religiosity on Suicidal Ideation: A Study Among a Population-Based Sample of Adolescents in the United States

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by
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ABSTRACT

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Suicide is a major public health issue in the United States. Some studies show decreased suicide rates in religious populations, but it is unclear how religiosity might be linked to suicidal behavior of adolescents emerging into adulthood. To this point few studies have examined the relationship between adolescent suicidal ideation and several risk factors at once and the role of religiosity in these relationships.

Drawing from Waves I-III of the National Longitudinal Survey of Adolescent Health data from 1994 to 2002, I sought to explore the relationship between religiosity (i.e. religious affiliation, service attendance, prayer, perceived importance of religion) and suicidal ideation of adolescents over time. Additionally, associations between risk factors (i.e. poor parental relationship, low self-esteem, depressive symptoms, suicidal behavior of friends and family, drug use, alcohol use, aggressive behavior) and risk of suicidal ideation were assessed by simple logistic regression analyses. Multivariate analyses were then used to examine the relationships among the risk factors and suicidal ideation. In a second step of the multivariate analyses, religiosity was added to the model to test if there would be a change in the odds ratios.

Results of the simple logistic regression indicated adolescents' religiosity was negatively correlated with suicidal ideation, while the selected risk factors were positively correlated with suicidal ideation among adolescent participants. However, as participants became young adults, one religiosity measure (i.e. prayer) and one aggressive behavior measure (i.e. access to weapons) were no longer significantly related to their suicidal ideation. Also, females and Whites were more likely to report suicidal ideation than males or African Americans, respectively.

In the multivariate models all the selected suicide risk factors were positively correlated with suicidal ideation. When religiosity was added to the model, it had a positive impact on aggressive behavior among older adolescents in Wave II (35% reduced risk) and drug use among younger adolescents in Wave I (14% reduced risk). Religiosity had marginal impact on the rest of the risk factors: 0.1% – 2.4% reduced risk in some and 0.2% – 1.6% increased risk in others in all 3 waves.

DEDICATION

I dedicate this dissertation to the memory of my biggest cheerleader, mother, and friend, Agnes Ekpoti Miah, who taught me never to give up. Sadly, she did not live to see the fulfillment of all her dreams for me, but I am grateful to her for sowing the seed of accomplishment in me.

Mama, we made it!

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This is my prayer for all:

"May the LORD answer you when you are in distress;

may the name of the God of Jacob protect you.

May He send you help from the sanctuary

and grant you support from Zion.

May He remember all your sacrifices

and accept your burnt offerings

May He give you the desire of your heart

and make all your plans succeed" (*Psalm 20:1-4 NIV*)

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Adolescents aged 10-24 make up 20.4% of the population of the United States (US) (U.S. Census Bureau, 2011). Studying the health behavior of this age group is very important as many premature deaths among adults are largely due to behaviors initiated during adolescence (WHO, 2012). It is in this vein that the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the United Nations Population Fund (UNFPA) advocate for a quick approach to promoting the health and development of adolescents (WHO, 2012).

Suicide is a serious problem among adolescents and young adults in the US (WHO, 2012), and delineating the causal path among this age group is the first step in seeking a solution to the problem. Several studies (e.g. Eskin, 2004; Jarbin & von Knorring, 2004; Nkansah-Amankra et al., 2012; Walker & Bishop, 2005) have found suicide and other forms of suicidal behavior to be less common among religiously involved youth than those with no religious affiliation or religious involvement. However, few of these studies use robust measures to investigate the relationship between religion and suicidal behavior, thus making causal inference problematic. In this research I seek to fill the methodological gap by employing longitudinal data to analyze the relationship between religiosity and suicidal behavior and the relationship between other known suicide risk factors and suicidal behavior among youth. The variance of risk between these risk factors and suicidal behavior when religiosity is present is also explored.

Statement of the Problem

Suicide is a major source of preventable death and a serious public health problem. It was the number one cause of injury mortality in the US from 2000 to 2009 (Rockett et al., 2012).

Suicide has a devastating and long-lasting effect on individuals, families, and communities (Centers for Disease Control and Prevention [CDC], 2012). Adolescents and young adults are especially at risk of suicide-related deaths. For example, suicide was the 11th leading cause of death from 1999 to 2010 in the general population, but among persons aged 10-24 years it was the 3rd leading cause of death for the same period (CDC, 2012). The death rates for adolescent suicide have remained persistently high over the years in spite of the many ongoing national efforts aimed at reducing this epidemic. Among adolescents aged 10-24 suicide resulted in the loss of approximately 5,000 lives each year from 1999 to 2007 (CDC, 2012).

Another public health problem that is closely related to suicide is suicidal ideation and attempt. A history of suicidal ideation and attempt has been linked to suicide deaths (e.g. Beghi, & Rosenbaum, 2010; Choi, Park, Yi, & Hong, 2012; Hultén et al., 2001; Madsen, Agerbo, Mortensen, & Nordentoft, 2012; Suominen et al., 2004; Wexler, Silveira, & Bertone-Johnson, 2012). Among adolescents there are approximately 100-200 attempts for every suicide death (Goldsmith, Pellmar, Kleinman, & Bunney, 2002). Each year about 157,000 youth between the ages of 10 and 24 receive medical care for self-inflicted injuries at emergency departments in the US (CDC, 2012).

One fact worthy of note is the significant role religion plays in American culture. For instance, the yearly Gallup polls from 1992 to 2011 consistently showed that over 80% of Americans consider religion as either fairly important or very important in their lives (Gallup, 1992-2011). Hence, it is not surprising that many studies have been devoted to examining the relationship between religiosity and health outcomes including suicidal behavior. Results of religiosity-suicide relationship studies are varied, although the majority conclusively report an inverse relationship (e.g. Abar, Carter, & Winsler, 2009; Abdel-Khalek, 2006; Afifi, Soweid,

Khawaja, & Salem, 2004; Ai, Peterson, Bolling, & Koenig, 2002; Ai, Peterson, Bolling, & Huang, 2003; Dervic et al., 2004; Fellingham, Mcbride, Tolley, & Lyon, 2000; Huguelet et al., 2007; Meadows, Kaslow, Martie & Jurkovic, 2005; Rostosky, Danner, & Riggle, 2010; Shah & Chandia, 2010). Other studies have reported mixed findings (e.g. Sisask et al., 2010). In some instances only certain aspects of religion are associated with suicidal behavior. For example, in a study by Nonnemaker, McNeely, and Blum (2003), it was found that while private religiosity was significantly associated with a lower likelihood of having had suicidal thoughts and attempts, public religiosity was not associated with suicidal behavior. In other cases specific religiosity measures are associated with higher rates of suicidal behavior. A case in point is the finding by Taylor, Chatters, and Joe (2011) that "looking to God for strength, comfort, and guidance" is protective against suicidal attempts and ideation. However, reporting that prayer is "important in stressful situations" is associated with higher levels of suicidal ideation and attempts. Equally significant is the research finding that it is not one's religious commitment or involvement per se that makes it less likely for one to have suicidal tendencies but the support received from members of one's religious group that protects the individual against suicidal behavior (e.g. Durkheim, 1951; Ellison, Burr, & McGall, 1997; Pescosolido & Georgianna, 1989; Rasic et al., 2009; Robins & Fiske, 2009).

Even though much research has been dedicated to the study of suicidal behavior and religion, few have looked at how religion might be linked to the suicidal behavior of young adolescents emerging into adulthood. Moreover, current research on adolescents' religiosity and suicidal behavior has been limited by, among other things, sample size. To help address this shortcoming, in this study I use a large longitudinal data sample to explore the relationship between religiosity and suicidal ideation of adolescents over time in hopes of informing suicide

prevention and intervention programs because the use of religion as an intervention strategy is almost nonexistent in current youth suicide prevention programs.

Investigating the relationship between religion and adolescent suicidal behavior is significant on several fronts. First, it is essential to explore the health behavior of adolescents as behavior acquired during the youthful years has a lasting effect on the individual's health as an adult (DeWit, Adlaf, Offord, & Ogborne, 2000; McGue & Iacono, 2005). In particular, suicide and other forms of suicidal behavior pose a serious risk for adolescents who constitute a significant proportion of the U. S. population, and the need to investigate in a bid to find appropriate solutions to the problem cannot be overstated. Furthermore, it is evident in several studies that religiosity is related to less suicidal behavior. Hence it is essential to ascertain the mechanisms through which religion impacts suicidal behavior of adolescents. Second, this research expands the literature on religion's influence on adolescent suicidal behavior with the investigative position that to have a more comprehensive approach to adolescent suicide prevention, it may be beneficial to include some aspects of religiosity in intervention programs.

There are three specific aims for this study: (1) to evaluate the strength and direction of relationship between religiosity and suicidal ideation, (2) to examine if there is a difference in the strength and direction of relationship between intrinsic and extrinsic religiosity and suicidal ideation, and (3) to examine the strength and direction of relationship between parental relationships depressive symptoms, self-esteem, drug use, alcohol use, suicidal behavior of family and friends, and aggressive behavior and suicidal ideation; and to examine the strength and direction of these relationships when religiosity is added.

CHAPTER 2

LITERATURE REVIEW

Adolescence

The term *adolescence* is commonly used to describe "the period from the beginning of puberty until adulthood" (Venes & Thomas, 1997 p. 46). Although almost every adolescent goes through key developmental changes as he or she transitions from puberty to adulthood, the end of adolescence and the beginning of adulthood varies among individuals and cultures (Van Hasselt & Herson, 1987; Venes & Thomas, 1997). Hence, various experts have proposed different age limits for adolescence. For example, WHO defines adolescence as 10 to19 years (WHO, 2012), and U.S. Department of Health and Human Services (HHS) pegs the adolescent period at 10-24 years, but with further groupings namely: early adolescence – 11-13 years; middle adolescence – 14-18 years; late adolescence – 19-24 years (HHS, 2012). On the other hand, CDC defines the age range for adolescents as10-19 and refers to 20-24 year olds as young adults (CDC, 2007), but sometimes uses the age range 10-24 years in publications like the Morbidity and Mortality Weekly Reports (e.g. http://www.cdc.gov/mmwr/PDF/ss/ss5704.pdf).

Adolescence is a key developmental period. This is the period when major physical, emotional, and intellectual changes occur as well as changes in social roles, relationships, and expectations, all of which are essential for the development of the individual and provide the basis for how he or she will function as an adult (Kipke, 1999). While most adolescents remain psychologically healthy, some experience difficulty and have an inclination toward risk-taking behavior (Steinberg, 2004). Some of these adolescents experience difficulty to such a degree that they exhibit suicidal tendencies (Fortune, Stewart, Yadav, & Hawton, 2007). Nevertheless, some research studies have revealed that a higher level of parent-child connectedness tends to lessen

negative behavior and boost positive emotions and behavior of the adolescent (Boutelle, Eisenberg, Gregory, & Neumark-Sztainer, 2009).

Epidemiology of Suicide, Suicide Attempt, and Suicidal Ideation Among Adolescents

Suicide is (a) "death caused by self-directed injurious behavior with any intent to die as a result of the behavior" (CDC, 2012, Suicide, para. 1) or (b) "the act of deliberately killing oneself" (WHO, 2012, Suicide, para. 1). Compared to other causes of death, suicide is more prevalent among adolescents and young adults. It was the second leading cause of death among adolescents and young adults aged 10-24 in 2010 (CDC, 2012). Among 10- to 24-year olds, suicide accounts for approximately 13% of all deaths annually (CDC, 2012). There are gender and racial differences in the risk of suicide among adolescents. Adolescent males aged 10-24 years are about five times more likely to die of suicide than their female counterparts (CDC, 2013). Similarly, Caucasian adolescents aged 10-24 years are twice as likely to die of suicide as African American adolescents (CDC, 2013). In addition to destroying the lives of young people, suicide puts a strain on the economy. In 2005 the combined total cost (medical cost and work loss) as a result of suicide among 10- to 24-year olds in the US was over $7 billion (CDC, 2012). Furthermore, suicide accounted for almost 9 million years of potential life lost (YPLL) before age 65 among all races and both sexes in the US from 1999 to 2010 (CDC, 2012).

Similarly, suicide attempt, "a non-fatal self-directed potentially injurious behavior with any intent to die as a result of the behavior" (CDC, 2012, Suicide Attempt, para. 2), is a critical public health problem among adolescents and young adults. In a 2011 nationally representative sample of youth in grades 9-12, 7.8% of students reported that they had attempted suicide one or more times during the 12 months preceding the survey; 2.4% of students reported that they had made a suicide attempt that resulted in an injury, poisoning, or an overdose that required medical

attention (CDC, 2012). Generally, adolescent females have higher rates of suicide attempts than do adolescent males (CDC, 2012; De Man, 1992; Maimon & Khul, 2008; Vander Stoep, McCauley, Flynn, & Stone, 2009). For example, statistics for 2011 show that adolescent females have twice the likelihood of suicide attempts than adolescent males (CDC, 2011).

Another problem affecting adolescents and young adults is suicidal ideation –"thinking about, considering or planning for suicide" (CDC, 2012, Suicidal Ideation, para. 3). In a 2011 nationally-representative sample of youth in grades 9-12, 15.8% of students reported that they had seriously considered attempting suicide during the 12 months preceding the survey (CDC, 2012). Adolescent females are almost twice as likely to have suicidal thoughts as adolescent males (CDC, 2012; Evans, Hawton, Romdan, & Deeks, 2005; Vander Stoep et al., 2009).

Risk Factors of Suicide, Suicide Attempt, and Suicidal Ideation

Risk factors are characteristics that have been shown to predict an increased likelihood that an individual will develop a disorder or experience an adverse outcome (Kaplan, Turner, Norman, & Stillson, 1996). The CDC's (2012) recommendation that prevention of suicide and other forms of suicidal behavior should include addressing risk factors for these behaviors is worthy. This is because it is by identifying who is at risk of suicidal behavior and knowing how to prevent it that mental health practitioners and those designing educational and public health prevention programs can have the necessary tools to combat this public health problem (Gould, Greenberg, Velting, & Shaffer, 2003).

Several factors are known to predict increased risk of suicidal behavior. The risk factors are grouped under personal characteristics and behaviors, family characteristics and behaviors, and sociocultural factors in this study.

Personal Characteristics and Behaviors

Suicide. Being an adolescent is a risk factor for suicide. It is at this stage of development that individuals attempt to establish sexual, ideological, and career identities that bring in their wake considerable stress and thus increases adolescents' susceptibility to suicidal behaviors (Portes, Sandhu, & Longwell-Grice, 2002). Other personal characteristics that are known to increase the risk of suicide include history of previous suicide attempts (Brent, Baugher, Bridge, Chen, & Chiappetta,1999; CDC, 2012; Nordentoft, 2007); suicidal ideation (Yen, Weinstock, Andover, Sheets, Selby, & Spirito, 2012); history of mental illness such as depression, personality disorder, or schizophrenia (Beautrais, 2000; CDC, 2012; Greening & Stoppelbein, 2002; Jarbin & von Knorring, 2004; Kahn & Fawcett, 2008; Nordentoft, 2007); psychological distress (Pillai, Andrews, & Patel, 2009); impulsive or aggressive tendencies (CDC, 2012); some physical illnesses (CDC, 2012; Jones et al., 2003; Kahn & Fawcett, 2008); incarceration (NIMH, 2O10); history of alcohol or drug abuse (CDC, 2012; Nordentoft, 2007; Schilling, Aseltine, Glanovsky, James & Jacobs, 2009; Vijayakumar, Kumar, & Vijayakumar, 2011; WHO, 2012); and feelings of hopelessness (CDC, 2012).

Suicidal Ideation and Suicide Attempt. Ten Have, van Dorsselaer, and de Graaf (2012) have found that the strongest personal risk factors for the transition from suicidal ideation to first suicide attempt are early age of first suicidal ideation and previous suicide plans. Also, Wichstrøm (2000) has found female gender, young age, perceived early pubertal development (especially among girls), alcohol intoxication, not living with both parents, and poor self-worth to be the strongest predictors of future suicide attempts. Other personal risk factors include: previous suicide ideation (Nordentoft, 2007; ten Have et al., 2009; Wichstrøm, 2000), history of previous suicide attempts (Nordentoft, 2007; Wichstrøm, 2000), high Body Mass Index (BMI)

(Zhang, Yan, Li, & McKeown, 2012), hyperactive disorder (Impey & Heun, 2012), anxiety disorders (Sareen et al., 2005), mental disorders (Taylor et al., 2010), posttraumatic stress disorder (Krysinska & Lester, 2010), depressive symptoms including hopelessness (Chabrol & Choquet, 2009; Handley et al., 2012; Molock, Puri, Matlin, & Barksdale, 2006), loneliness, not having close friends (Wilson, Dunlavy, Viswanathan, & Bovet, 2012), and alcohol and substance abuse (Huang, Yen, & Lung, 2010; Miller et al., 2011; Nordentoft, 2007).

Family Characteristics and Behaviors

Suicide. Family characteristics that increases suicide risk include family history of suicide (CDC, 2012), family history of child maltreatment (CDC, 2012), inadequate family support (Shilubane et al., 2012), dissociated parental relationship (Hedeland et al., 2013), family dysfunction (Kahn & Fawcett, 2008), and genetic influences (Zalsman, 2012).

Suicidal Ideation and Suicide Attempt. Family characteristics that have been found to increase the risk of suicidal ideation and attempts among adolescents include past family and peer suicide attempts (Shilubane et al., 2012; Sidhartha & Jena, 2006), inadequate family support (Dubow, Kausch, Blum, Reed, & Bush, 1989; Huang, Yen, & Lung, 2010; Shilubane et al., 2012), perceived parental neglect (Sidhartha & Jena, 2006), parental suicidal ideation (Goodwin, Beautrais, & Fergusson, 2004), family history of suicide (Rubestein, Halton, Kasten, Rubin, & Stechler, 1998), physical abuse by parents (Sidhartha & Jena, 2006), and being an adoptee (Slap, Goodman, & Huang, 2001).

Sociocultural Factors

Suicide. Some sociocultural factors that increase the risk of suicide are easy access to lethal methods (Brent et al., 1999; CDC, 2012), exposure to the suicidal behavior of others (Bearman & Moody, 2004; De Leo, Cerin, Spathonis, & Burgis, 2005), conflicts in interpersonal

relationships (Shilubane et al., 2012), stressful life event or loss (Almasi et al., 2009), spiritual anxiety (Kahn & Fawcett, 2008), cultural and religious beliefs (e.g. belief that suicide can be used to resolve a personal problem, [CDC, 2012]), and lifetime history of abuse (Brent et al.,1999).

Suicidal Ideation and Attempt. Sociocultural risk factors for suicidal ideation and attempt include: exposure to bullying (Brunstein Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Hepburn, Azrael, Molnar, & Miller, 2012), conflict in interpersonal relationships (Shilubane et al., 2012), lower levels of social integration and social support (Compton, Thompson, & Kaslow, 2005), exposure to the suicidal behavior of friends (Bearman & Moody, 2004), social isolation (Bearman & Moody, 2004), religion ([e.g. Hindu] Sidhartha & Jena, 2006), and a history of sexual abuse (Lin, Li, Fan, & Fang, 2011).

It is important to note that presence of these risk factors does not necessarily lead to suicidal tendencies in an individual. Many people have these risk factors but do not end up thinking about suicide, attempting suicide, or dying of suicide (National Institute of Mental Health [NIMH], 2012).

Protective Factors of Suicidal Behavior

Protective factors are conditions or characteristics in individuals, families, communities, or the larger society that, when present, reduce or eliminate risk and promote the health and well-being of individuals (HHS, 2012). Protective factors for suicidal behavior include effective clinical care for mental, physical, and substance abuse disorders (CDC, 2012); easy access to a variety of clinical interventions and support for help seeking (You, Van Orden, & Conner, 2011); increased family and peer support, community connectedness (Matlin, Molock, &Tebes 2011); high family support (Sharaf, Thompson, & Walsh, 2009; Tang et al. 2010; Walsh, Edelstein, &

Vota, 2012); perceived high parent and family connectedness (Borowsky, Ireland, & Resnick, 2001; Slap et al., 2001; You, Van Orden, & Conner, 2011), family cohesiveness (Stack, 2000); support from ongoing medical and mental health care relationships, skills in problem solving, conflict resolution, and peaceful ways of handling disputes (CDC, 2012); cultural and religious beliefs that forbid suicide (CDC, 2012; Nelson, Hanna, Houri, & Klimes-Dougan, 2012); commitment to life-affirming beliefs (Stack, 2000); religion (Gearing & Lizardi, 2008; Hoffman & Marsiglia, 2012; Sisask et al., 2010; Stack, 2000); satisfaction with religious beliefs (Jarbin & von Knorring, 2004); having parents who are religiously involved (Caribé et al., 2012; Yur'yev et al., 2012); having parents who are understanding (Wilson, Dunlavy, Viswanathan, & Bovet, 2012); mother attachment (Baumann, Kuhlberg, & Zayas, 2010; Kim, Chae, & Bae, 2012); social support from family and friends (Tang et al. 2010; Winfree & Jiang, 2010); playing sports (Stack, 2000); and high level of school connectedness (Langille, Rasic, Kisely, Flowerdew, & Cobbett, 2012; Stack, 2000).

Current Adolescent Suicide Prevention Resources and Programs

Suicide prevention has been the focus of multiple international and national intervention efforts for many years. For example, WHO (2012) advocates for restriction of access to means of suicide such as toxic substances and firearms. The organization also supports programs aimed at identifying and managing individuals suffering from mental and substance use disorders, promotes improved access to health and social services, and provides recommendations for responsible reporting of suicide by the media.

On a national level the 2020 edition of the Healthy People document (the document that provides science-based, 10-year national objectives for improving the health of all Americans) has two of its objectives as (1) reducing the suicide rate and (2) reducing suicide attempts by

adolescents (HHS, Healthy People 2020, 2012). Treatment expansion objectives outlined in this document include: "increase the proportion of primary care facilities that provide mental health treatment onsite or by paid referral, increase the proportion of children with mental health problems who receive treatment, and increase the proportion of juvenile residential facilities that screen admissions for mental health problems" (HHS, Healthy People 2020, 2012, p.226)

Other national resources for programs and interventions specifically geared toward adolescent health include the Consortium on Child and Adolescent Research, which was established in 1990 by the National Institute of Mental Health to research the brain and mental disorders –known risk factors for suicide (CDC, 2012; Kahn & Fawcett, 2008); the Department of Health and Human Services' National Strategy for Suicide Prevention (NSSP) that emphasizes how to protect friends, family members, and colleagues from suicide and provides guidance for schools, businesses, and health systems; and CDC's Strategic Direction for the Prevention of Suicidal Behavior: Promoting Individual, Family, and Community Connectedness to Prevent Suicidal Behavior that describes CDC's vision to prevent fatal and nonfatal suicidal behavior (CDC, 2012).

Other evidence-based suicide intervention programs also exist. There is the American Indian Life Skills Development, a school-based suicide prevention curriculum designed to reduce suicide risk and improve protective factors among American Indian adolescents from 14 to 19 years old (Substance Abuse and Mental Health Services Administration**([**SAMHSA], 2012). Also, Columbia University's TeenScreen program identifies middle school-aged and high school-aged youth in need of mental health services due to risk of suicide and undetected mental illness **(**SAMHSA, 2012). Another suicide intervention program is LEADS (Linking Education and Awareness of Depression and Suicide): For Youth, a curriculum for high school students in

grades 9-12 that is designed to increase knowledge of depression and suicide, modify perceptions of depression and suicide, increase knowledge of suicide prevention resources, and improve intentions to engage in help-seeking behaviors **(**SAMHSA, 2012). Lastly, the Model Adolescent Suicide Prevention Program (MASPP), a public health-oriented suicidal behavior prevention and intervention program, is aimed at reducing the incidence of adolescent suicides and suicide attempts through community education about suicide and related behavioral issues such as child abuse and neglect, family violence, trauma, and alcohol and substance abuse **(**SAMHSA, 2012).

Furthermore, there are a number of suicide prevention programs (some of which receive government support) on college campuses across the US. For example, SAMHSA provides support for college suicide prevention efforts through its Campus Suicide Prevention Grants program. The program supports colleges and universities in their determination to prevent suicide among students and to expand services for students with depression, substance abuse, and other behavioral health problems that put them at risk of suicide (SAMHSA, 2011). Grantees that have suicide prevention programs in place before they receive the grants use the funds to enhance their existing programs. Other grantees use the funds to develop programs from the very start (SAMHSA, 2011). One notable SAMHSA program is the College Screening Project developed by the American Foundation for Suicide Prevention together with university partners. This project is a suicide prevention outreach effort that uses the internet to identify students who are at-risk of suicide and encourage them to enter into treatment (Garlow et al., 2008).

Adolescent Suicide Prevention Strategies

The general recommendation for achieving a greater impact for suicide prevention is to focus prevention efforts on all levels of society – from the individual, family, and community levels to the broader social environment (CDC, 2012). Adolescent suicide prevention strategies

have targeted the different levels but have primarily been implemented within three domains: school, health care, and community settings (Gould et al., 2003) with the primary goal of promoting awareness of suicide, suicide prevention, resilience, and a commitment to social change (CDC, 2012). To a large extent current suicide prevention efforts address several of the factors that put youth at risk of suicidal behavior as well as factors that protect them from engaging in such behavior per CDC's recommendation (CDC, 2012). Nonetheless, more emphasis is placed on nonreligious rather than religious factors. In this section the most commonly espoused adolescent suicide prevention strategies are reviewed.

School-Based Suicide Prevention Strategies

The U.S. Department of Health and Human Services through its 2012 National Strategy for Suicide Prevention document urges schools, colleges, and universities to implement programs and policies to prevent abuse, bullying, violence, and social exclusion. Another recommendation in this document is these institutions to carry out programs and policies that build social connectedness and promote positive mental and emotional health. Lastly, schools of journalism, film, and other communication disciplines are encouraged to integrate information about the responsible depiction of suicide and suicide-related behaviors into their curricula (HHS, 2012). Some of the widely implemented school-based strategies are efforts directed at students and school personnel (CDC, 2012).

Student-Focused Interventions. Student-focused interventions include teaching suicide awareness as part of the school curriculum, offering screening programs (student self-report and school-wide), and improving students' feeling of connectedness (CDC, 2012). Suicide awareness curriculum consists of packaged, self-contained lesson plans provided by teachers and entails teaching students about suicide and suicidal behavior in a group or class setting (Kalafat, 2003;

Scherff, Eckert, & Miller, 2005). The curriculum-based instruction uses principles such as participatory activities, skills practice and feedback, reinforcement, and acknowledgement of students' experience (e.g. in dealing with troubled peers) (Kalafat, 2003). Curriculum-based topics regarding suicide prevention include how to influence or support others, how to find valid health information or services, influence of families, influence of the media, relationship between alcohol or other drug use and suicidal behavior, resisting peer pressure, and how to recognize social or cultural influences (CDC, 2012). The goal of these programs is to increase awareness of risk factors and signs of suicidal behavior in order to encourage adolescents to self-report their suicidal tendencies and to prepare students to identify peers who are at risk of suicide and take responsible action (Gould et al., 2003).

School-based screening involves assessment of suicide risks among students through self-report on questionnaires and personal interviews. Screening usually consists of asking students directly about whether they are experiencing symptoms of depression, currently or previously had suicidal ideations or behaviors, and whether they have other risk factors for suicide (such as substance abuse problems) (Shaffer & Craft, 1999). The objective is to identify adolescents at risk of suicidal behavior (Shaffer & Craft, 1999; Thompson & Eggert as cited in Gould et al., 2003). There are two methods of screening. The first is a broad method and comprises screening all students in the school. The second method, focused screening, involves combining screening with other methods for identifying students at risk of suicidal behavior such as using gatekeepers or peers. Once those students potentially at risk are identified, they are rescreened and consequently evaluated by mental health specialists (Doan, LeBlanc, Roggenbaum, & Lazear, 2012).

An additional school-based student-focused intervention entails cultivating a sense of belonging among students. One way schools are nurturing students' feelings of connectedness in the school environment is by providing students with after school activities and clubs (Garland & Zigler, 1993; Gould et al., 2003), thus allowing them to participate in making decisions about issues regarding their lives in the school (Doan et al., 2012).

In-Service Training for Staff. Staff-oriented school-based intervention strategies entail educating all faculty and staff (including such staff as bus drivers and cafeteria workers) about risk factors for suicide, myths about suicide, and importance of suicide prevention. In addition, they are trained to recognize students who are at risk of suicidal behavior and to assess and refer such students to the appropriate services (Kalafat, 2003; SAMHSA, 2012).

Suicide Prevention Strategies in Healthcare Settings

Suicide prevention in healthcare settings requires assessing and treating adolescents who are at risk of suicidal behavior (American Academy of Child and Adolescent Psychiatry [AACAP], 2001). Assessment of suicidal patients includes evaluating the suicidal behavior and determining risk for death or repetition of suicide attempt, as well as an assessment of the underlying diagnoses or factors that promote suicidal behavior (AACAP, 2001). Assessment information is taken from several sources including the adolescent, parents or guardians, school reports, and other individuals close to the adolescent (AACAP, 2001).

Treatment comprises the acute management of suicidal behavior as well as treatment of associated mental disorders (AACAP, 2001). Management programs include providing inpatient care, partial hospitalization, and outpatient follow-up treatment for at-risk adolescents (Gould et al., 2003). Inpatient care interventions require hospitalizing high-risk suicide attempters (those who ceaselessly express a wish to die or who have a conspicuous abnormal mental state)

(AACAP, 2001). Patients are discharged when the clinician is satisfied that adequate supervision and support will be offered at least the first few days following the discharge and a responsible adult has agreed to secure or dispose of potentially lethal medicines and guns (AACAP, 2001). After discharge a plan is made for follow-up treatment. If clinicians are not contacted by the parent or guardian within a reasonable amount of time, they initiate the contact themselves and make efforts to continue treatment sessions (AACAP, 2001).

Treatment options for mental disorders associated with suicidal behavior include psychotherapy and pharmacotherapy (AACAP, 2001; WHO, 2002). Psychotherapy treatment takes different forms: cognitive behavioral, interpersonal, dialectical-behavioral, psychodynamic, and family-based cognitive therapy (AACAP, 2001).

Cognitive behavioral therapy is intended to address the distortions of thinking that may trigger suicidal crises and to help adolescents use more efficient means of coping when confronted with stressors and problems. It also involves encouraging the adolescent to be more self-confident and to use direct means of communicating, as well as increasing his or her ability to realize alternative solutions to problems (AACAP, 2001; Stanley et al., 2009).

The interpersonal therapy addresses existing interpersonal relationships and the immediate social setting of the adolescent (AACAP, 2001). Some of the interpersonal issues for adolescents that are addressed by this therapy include separation from parents, conflicts with parental authority, development of close relationships with members of the opposite sex, initial experience with death of a relative or friend, and peer pressures (AACAP, 2001). This method focuses on steering the patient toward a more effective way of interacting with individuals in his or her immediate social environment. The family is sometimes included in the treatment.

Therapists maintain frequent telephone contacts with adolescent patients (and parents, if they are involved) (AACAP, 2001).

Dialectical-behavioral psychotherapy treatment involves developing strategies to increase the adolescent patient's tolerance for distress. Other strategies are designed to help the patient develop temperate emotions, better interpersonal relationships, and how to make more balanced decisions (AACAP, 2001; MacPherson, Cheavens, & Fristad, 2013).

Psychodynamic psychotherapy aims to resolve internal conflicts related to rejection, severe discipline, and abuse the suicidal adolescent may have experienced in childhood. It is also meant to improve patients' self-esteem by enabling them to become more self-reliant (AACAP, 2001). Patients often receive guidance on socially acceptable ways of expressing thoughts and emotions (Van Hasselt & Herson, 1987).

Family-based cognitive therapy aims to change how the family perceives their problems and any dysfunctional problem-solving method used in the past. This kind of therapy is also meant to inspire positive family interactions (AACAP, 2001; Van Hasselt & Herson, 1987).

Pharmacotherapy treatment entails prescribing medications known to reduce suicidal tendencies (e.g. lithium, selective serotonin reuptake inhibitors prescription) to stabilize and treat the suicidal adolescent (AACAP, 2001; Van Hasselt & Herson, 1987). The therapist is usually at liberty to use any or a combination of these treatment methods depending on individual cases (AACAP, 2001).

To facilitate the implementation of this intervention primary care physicians and pediatricians are trained on how to recognize and treat depression and other mental disorders (HHS, 2012; Mann et al., 2005). These professionals also receive training on how to evaluate and routinely screen for suicide risks (such as alcohol misuse) among their patients and connect

those at risk of suicide to existing clinical services and other sources of care (HHS, 2012; Mann et al., 2005).

Suicide Prevention Strategies in Community Settings

Community-based suicide prevention includes setting up crisis centers and hotlines equipped with trained volunteers and paid staff to provide telephone counseling and other services for suicidal persons who contact them on their own or who are referred by mental health personnel. These services are convenient and accessible at all times as they are available beyond normal office hours and offer the opportunity for immediate support at critical times (CDC, 1994; Gould et al., 2003). Another community-based strategy is the restriction of access to firearms through legislative measures (for example, a delay in purchasing firearms, [Gould et al., 2003]) with the underlying rationale that the most common method of suicide is by means of firearms (CDC, 2007; CDC, 2009 [51%]). Additional weapon restriction measure involves educating parents of high risk adolescents about the importance of removing guns from the home (Gould et al., 2003).

As alluded to earlier, these widely used adolescent suicide prevention programs lack strategies aimed at increasing religious involvement or the level of religiosity of adolescents or their parents and guardians or both – factors that are demonstrated to predict lower levels of suicidal behavior (Caribé et al., 2012; Cotton, McGrady, & Rosenthal, 2010; Yur'yev et al., 2012). It is worthwhile to establish how religiosity works to reduce risk of suicide and other suicidal behaviors and how these factors can be fused into existing prevention programs. Hopefully, this study will contribute to existing knowledge about the religiosity-suicidal behavior relationship and inform prevention efforts.

Religiosity

The concept of religiosity is approached differently by diverse academic disciplines. For example, a theologian would address religiosity from the viewpoint of faith, while religious educators would focus on belief. Psychologists on the other hand may address the dimensions of devotion, holiness, and piousness; and sociologists may include church membership, church attendance, belief acceptance, knowledge of doctrines, and living the faith (Holdcroft, 2006). In spite of the varied interpretations, the general consensus is that religiosity is related to "the search for the sacred or transcendent, which includes concepts of God, a higher power, the divine and/or ultimate reality. The sacred represents the most vital destination sought by the religious/spiritual person" (Moreira-Almeida & Koenig, 2006, p.844). Koenig, McCullough, and Larson (2001) in *Handbook of Religion and Health* define religion as "(a) belief in a divine or superhuman power or powers to be obeyed and worshipped as the creator(s) and ruler(s) of the universe, (b) the expression of such a belief in conduct and ritual…. [or] any specific system of belief, worship, conduct, etc., often involving a code of ethics and philosophy…" (p. 18).

A distinction is also made between the terms *extrinsic* and *intrinsic religiosity* to denote the level of religious commitment of an individual. These terms were first proposed by psychologists Allport and Ross (1967). They defined *extrinsic religiosity* as "religious self-centeredness". According to this view people with extrinsic religious orientation are religiously immature. Such people may go to places of worship or attend religious services as a means to an end and may participate in religious activities without deep and personal religious commitment. Moreover, they may want to be seen as conforming to social norms in order to gain respect or social acceptance. On the other hand, *intrinsic religiosity* is thought to be a quest for a personal relationship with the sacred and, consequently, result in the practice of private religious activities

such as private prayer and meditation. People with intrinsic religious orientation are considered to have a more mature view of their engagement with religion. They may see their religion as an end in itself. They also tend to be more deeply committed and consider religion to be a central and personal experience (Allport & Ross, 1967). In particular, some research studies have found intrinsic religiosity measures to be predictive of lesser suicidal behavior as well as other risk factors of suicidal behavior than do extrinsic religiosity measures (e.g. Nkansah-Amankra et al., 2012; Nonnemaker et al., 2003; Walker & Bishop, 2005).

Religious Composition of the United States

About 84% of the U.S. population identifies with one religion or another, with the majority being Christian (78.4%), while the rest constitutes other religions (4.7%) (Pew Research Center, 2008). The other religions are composed of: Jewish (1.7%), other faiths (1.2%), Buddhist (0.7%), Unitarians and other liberal faiths (0.7%), Muslim (0.6%), Hindu (0.4%), New Age (0.4%) religion, other world religions (<0.3%), and Native American religion (<0.3%) (Pew Research Center, 2008).

There are groupings within some of these religious traditions as well. The Christian religion comprises Protestants (with further subdivisions), Catholics, Mormons, Jehovah's Witnesses, Orthodox (with further subdivisions), and Other Christians. In the Jewish religion, there are the Reform, Conservative, Orthodox, and Others. The Buddhist religion also has the Zen Buddhists, the Theravada Buddhists, the Tibetan Buddhists, and Others. Within the Muslim religion, there are the Sunni, Shia, and Other Muslims (Pew Research Center, 2008).

Research on the relationship between religion and health including suicidal behavior has primarily focused on Christian, Jewish, and Muslim religions; however, Western and, especially, US-originated research are predominantly on Christian denominations and sects (Koenig, Zaben,

& Khalifa, 2012). Equally, most research in the US uses religiosity measures that are based on the Christian religion (Chatters, 2000). This is not surprising considering the high percentage of Americans who favor the Christian religious tradition. While there are differences in the burden of suicide among the different religions, empirical evidence indicates that across religions a higher level of religious involvement is associated with reduced suicide risk (Dervic et al., 2004).

Significance of Religion in the Lives of American Adolescents

Historically, the adolescent years were thought to be the period of religious consciousness in an individual, and early adolescence (about age 12) was an important turning point (Ames, 1910). Currently, religious beliefs and practices still remain important in the lives of American adolescents. Surveys and public opinion polls have revealed that a large percentage of American adolescents profess to be religious. For example, a study by the National Study of Youth and Religion (NSYR) reports that 84% of American adolescents surveyed expressed "belief in God" (Denton, Pearce, & Smith, 2008); although these beliefs tend to decline in early adulthood and pick up again in late adulthood (Gallup, 2002; Uecker, Regnerus, &Vaaler, 2006). Analyzing National Longitudinal Survey of Adolescent Health (Add Health) data, Smith, Denton, Faris, and Regnerus (2002) found that 87% of American youth affiliate with one religious tradition or another. The same researchers using data from the Monitoring the Future Survey found that 38% of the youth attend religious services weekly, 16% attend one or two times a month, 31% attend rarely, and 15% never attend (Smith et al., 2002). Researchers also noted that religious service attendance and youth group participation vary by religious tradition. From Add Health data, they found that the more conservative religious groups and those with larger proportions of African Americans (e.g. Jehovah's Witnesses, Mormons, Pentecostals, and

Baptists) have higher rates of attendance and youth group participation. Analyses of the Monitoring the Future Survey also produced similar findings (Smith et al., 2002).

In his article "theorizing religious effects among American adolescents", Smith (2003) explains the different but mutually reinforcing ways religion affects and shapes the lives of American adolescents: most religious teachings promote moral direction that youth may use to guide their choices in life and provide the organizational and cultural contexts for youth spiritual experiences that may help strengthen their moral commitments and positive life practices; religion furnishes adolescents with adult and peer role models, provides examples of behaviors and practices shaped by religious moral teachings, and offers positive relationships; religion affords the organizational contexts in which youth can hone their community and leadership skills that can be useful beyond religious activities; religion promotes beliefs and practices that can help youth cope with stress when faced with difficult life situations; religion provides youth with alternative opportunities outside family, school, and the media to acquire elements of cultural capital (e.g. musical education through participation in choirs, learning about world civilizations and empires through religious education) that can be valuable in other social settings as well; religion helps youth to form significant relationship networks that cut across age boundaries as they fellowship with believers of all ages and life course stages; religion offers dense networks of social ties within which youth are rooted and involve people who pay attention to them, supervise them, and discourage negative and encourage positive behavior; and lastly, religion offers adolescents connections to positive experiences and events outside their local communities thereby broadening their horizons and aspirations (Smith, 2003).

The Link Between Religion and Suicidal Behavior

Religiosity has been studied as a possible protective factor against suicidal behavior (see for example Pescosolido and Georgianna, 1989; Taylor et al., 2011). While some studies have found this to be true, other studies have published mixed findings. In this review, I explore the relationship between religion and suicidal behavior with special emphasis on suicide attempts and suicidal thoughts or ideation.

Rasic, Kisely, and Langille (2011) analyzed data from self-report surveys of adolescents aged 15-19 (N=1,615) at three high schools in Cape Breton, Canada, with the aim of examining relationships of measures of personal importance of religion (intrinsic religiosity) and frequency of attendance at religious services (extrinsic religiosity) with risk of depression and risk behaviors, including suicide, in high school students. Researchers performed the analyses separately for males and females with the underlying rationale that adolescent males and females have different predispositions for depression, suicidal behavior, and substance use. Results of univariate analysis showed that among females higher personal importance of religion was associated with decreased odds of depression, suicidal ideation, drinking, and marijuana use. Also, more religious service attendance was negatively associated with substance use behaviors and suicidal ideation among females. In males both personal importance of religion and frequency of attendance at religious services were associated with decreased substance use. In adjusted logistic regression models to assess associations of religiosity and other variables with depression, suicidal ideation, and substance use, researchers found that religious importance had weak negative associations with depression and suicidal ideation in females. In addition, service attendance was negatively related with suicidal thoughts in females, and was modified by depression. These associations were not seen in males.

Also, Eskin (2004) administered a questionnaire in a group of Turkish adolescents (n = 206) undergoing religious education and another group (n = 214) undergoing secular education to investigate the association of religious education versus secular education with suicidal ideation and attitudes toward suicide and a suicidal close friend in adolescents. Results of the study showed that suicidal ideation was more frequent in adolescents undergoing secular education than in those undergoing religious education. Also, the secular group was more accepting of suicide than the religious group.

Molock and colleagues (2006) conducted a cross sectional study to examine whether hopelessness and depression were risk factors for suicidal thoughts and attempts and whether religious participation and religious coping predicted lesser suicidal behavior in a sample of African American adolescents (n = 212). Researchers used the Hopelessness Scale for Children ([17 items] Kazdin, Rodgers, & Colbus as cited in Molock et al., 2006) to measure pessimistic attitude about the future and used the Reynolds Adolescent Depression Scale ([30 items] Reynolds as cited in Molock et al., 2006) to gauge severity of depressive symptoms. Questions used to measure religious participation were: "How active are you in church?" and "How often do you attend church?" Measurements of religious coping were: self-directive ("I act to solve my problems without God's help"), deferring ("God solves problems for me without my doing anything,"), and collaborative ("together, God and I put my plans into action") coping styles. Results indicated that there was no significant relationship between church attendance, activity level in church, and suicide ideation or attempts. Researchers, however, found that subjects who were active in church tended to be less likely to report feeling depressed ($r = -.13$, $p < .10$) and those who attended church regularly tended to be less likely to report feeling hopeless ($r = -.13$, $p < .10$).

Also, Sidhartha and Jena (2006) did a cross sectional study of adolescents aged 12 to 19 years (n = 1,205) through semistructured interview to examine how some demographic variables [(40 in all) (e.g. gender, age, religion, family dynamics, deliberate self-harm, adjustment, death wish, etc.)] could be related to suicidal ideation, suicidal plan, and suicide attempt. After univariate analysis, 23 variables were found to be statistically significant. Results of logistic regression analysis showed that Hindu religion, female sex, older age (15-18 years), physical abuse by parents, feeling neglected by parents, history of running away from school, history of suicide by a friend, death wish, and deliberate self-harm were significant predictors of suicidal ideation, suicidal plan, and suicide attempt.

Similarly, Nonnemaker et al. (2003) used a nationally representative U.S. sample of 16,306 adolescents to examine the association of public (frequency of attendance at religious services and frequency of participation in religious youth group activities) and private (frequency of prayer and importance of religion) domains of religiosity with adolescent health-related outcomes. It was found that private religiosity was significantly associated with a lower probability of having had suicidal thoughts or having attempted suicide. However, there was no significant relationship between public religiosity and suicidal thoughts and attempts.

Nkansah-Amankra et al. (2012) also sought to investigate prospective relationships among religiosity, psychosocial factors, and suicidal behaviors using Add Health data that were collected in 1994-1995 (Wave I) on 7^{th} to 12^{th} grade students in the US with follow ups in 1995-1996 (Wave II), in 2001-2002 (Wave III) when participants were 18-26 years old, and in 2008 (Wave IV) when participants were 24-32 years old. Researchers analyzed data of 9,412 respondents from all four existing waves. Results of preliminary analysis indicated that both adolescent suicidal behavior and religious activity participation declined significantly from 1994

to 2008. At Wave I, more than 55% of adolescents reported participating in religious activities at least once a week. This increased slightly (58%) a year later in Wave II, but showed significant declines in Wave III (about 18%) and Wave IV (17%). In Wave II, weekly religious attendance was significantly related to the risk of suicidal ideation. Adolescents who neither pray nor consider religion as important were at decreased risk of suicidal ideation but not suicidal attempts. Also, adolescents who attend church weekly and consider religion as fairly important showed an increased risk of suicidal ideation compared with those attending religious service daily and who consider religion as the most important aspect in their lives. In adjusted models, weekly church attendance at baseline was associated with 42% reduction of suicide ideation in Wave III.

In a study to test predictions about risk factors for youth who exhibit unrealistic fatalism about their future (not expecting to live past age 30), Jamieson and Romer (2008) employed four waves of a nationally representative telephone survey from 2002 to 2005 with youth ages 14-22 (n = 4,201). Results showed that fatalistic youth engaged in greater suicidal planning, had more accepting attitudes toward suicide, were less attached to religion, and were more impulsive than other youth. Approximately 43% of fatalists forecast a likely death by suicide, whereas the rest anticipated death by an outside source.

In another study Jarbin and von Knorring (2004) followed 88 subjects with adolescent-onset psychotic disorders for 10.6±3.6 years and assessed abuse of drugs and suicide occurrence or suicide attempts among this group. In this study suicide attempts were associated with more depressive symptoms. Satisfaction with religion, health, family relations, and safety at follow-up were inversely associated with attempting suicide. After controlling for concurrent symptoms of anxiety and depression, only satisfaction with religious belief remained.

Also, Rasic, Robinson, Bolton, Bienvenu, and Sareen (2011) used data from Waves III and IV of the Baltimore Epidemiologic Catchment Area Study (n = 1,091) to examine the longitudinal relationships of religious worship attendance and seeking spiritual comfort with subsequent major depression, anxiety disorders, and suicidal ideation and attempts. Results indicated that subjects who attended religious services at least once per year had decreased odds of subsequent suicide attempts compared with those who did not attend religious services (AOR = 0.33, 95% CI: 0.13-0.84). Seeking spiritual comfort at baseline was associated with decreased odds of suicidal ideation (AOR = 0.55, 95% CI: 0.31-0.99).

Taliaferro, Rienzo, Pigg, Miller, and Dodd (2009) also conducted a cross-sectional study among 457 college students to explore whether religious well-being and existential well-being (defined as feeling fulfilled and satisfied with life or finding meaning and purpose in life) relate to reduced suicidal ideation and whether the associations persisted after controlling for religiosity and psychosocial variables associated with suicide. Researchers used measures that assessed spiritual well-being, religiosity, hopelessness, depression, social support, and suicidal ideation. Spiritual wellbeing was assessed with the Spiritual Well-Being Scale (Ellison & Paloutzian, Paloutzian & Ellison, as cited in Taliaferro et al., 2009) that includes 20 items (10 items each were used to measure religious wellbeing and existential wellbeing), religiosity had one item measuring frequency of religious service attendance, hopelessness was measured with the 20-item Beck Hopelessness Scale (Beck, Weismasman, Lester, & Trexler as cited in Taliaferro et al., 2009), depression was measured with the 20-item Center for Epidemiologic Studies Depression Scale (Radloff, as cited in Taliaferro et al., 2009), social support was measured with the 25-item Personal Resource Questionnaire (Weinert as cited in Taliaferro et al., 2009), while suicidal ideation was measured by 25-item Adult Suicidal Ideation Questionnaire (Reynolds as

cited in Taliaferro et al., 2009). Results of linear regression modeling showed that neither involvement in organized religion nor religious well-being significantly contributed to suicidal ideation. However, existential well-being remained a significant predictor of suicidal ideation.

Similarly, Dervic et al. (2004) surveyed depressed inpatients (n =371) who reported belonging to one specific religion or described themselves as having no religious affiliation. Results indicated that religiously unaffiliated subjects had significantly more lifetime suicide attempts and more first-degree relatives who committed suicide than subjects who were affiliated with a religious group.

Lastly, decreased suicide rates have been found in more religious countries and cultures (Gallup, 2008). For instance, the 2005 and 2006 Gallup Polls respondents were asked whether religion was an important part of their daily lives, if they had attended a place of worship in the week prior to polling, and whether they had confidence in religious organizations in their countries. A religiosity index that reflected the percentage of positive responses to these three items was created (Gallup, 2008). The religiosity index was then compared with suicide statistics published in 2007 by the World Health Organization. The results showed that countries with higher religiosity index scores such as Kuwait (religiosity index score of 83), Philippines, (religiosity index score of 79), and Paraguay (religiosity index score of 79) have 1.95, 2.1, and 3.05 suicide rates respectively; while countries with low religiosity index scores such as Hungary (religiosity index score of 36), Belarus (religiosity index score of 35), and Latvia (religiosity index score of 32) have 28.45, 36.8, and 25.7 suicide rates respectively (Gallup, 2008).

The results of these studies suggest that religiosity may have a positive influence on suicidal behavior, although a couple of them showed no significant relationship between the two variables (Molock et al., 2006; Sidhartha & Jena, 2006) and one (Taliaferro et al., 2009) showed

a positive relationship. Particularly, the positive relationship finding of the Taliaferro study may be explained by the religiosity measure used. In this study religiosity was measured with one question regarding religious service attendance, a measure that has been found to have no or a weak association with suicidal behavior in some studies (e.g. Molock et al., 2006; Nonnemaker et al., 2003).

How Religion Could Influence Suicidal Behavior

In spite of the many studies reporting inverse relationships between religious involvement and suicidal behavior, the potential mediators of this relationship have rarely been investigated. It is unclear how religiosity influences suicidal behavior. The assertion that identifying as religious or being religiously involved is protective of suicidal behavior has also been questioned. Researchers claim that the religion-suicide relationship is not a simple causal connection and that there are other contributing factors involved.

Several mechanisms have been put forward to explain the influence of religion on suicidal behavior. For example, some researchers believe that it is the moral objections to suicide of some religious traditions (Dervic et al., 2004; Gearing & Lizardi, 2009; Nelson et al., 2012); or lower aggression level in religiously affiliated persons (Dervic et al., 2004; Gearing & Lizardi, 2009); or the stronger social control and social integration offered by the religious group (including friendship network and family integration (Durkheim, Spaulding, & Simpson, 1979; Gearing & Lizardi, 2009); or the prevention of risky behaviors due to shared moral standards, social support, sense of meaning, purposefulness and control, and meditation habits (Kornreich & Aubin, 2012) that may function as protection against suicidal behavior. Others surmise that if religious involvement can help people cope with unavoidable life stressors and is a source of

hope and meaning, religion could affect suicide risk through these pathways (Koenig, et al., 2012).

Religion and Suicidal Behavior Among Mentally Ill Persons

The bulk of the identified personal risk factors for suicide and other suicidal behaviors are related to mental illness. Against the backdrop of adolescents having a higher risk of this illness (lifelong psychological disorders usually begin in adolescence and emerging adulthood [Christie et al., 1988]) and a growing body of research suggesting religion's salutary effects on mental health of individuals (Wong, Rew, & Slaikeu, 2006) and especially those with mental illness (Koenig, King, & Carson, 2012, pp.145-173, 191-223), studies on the relationship between religion and mental illness are reviewed in this section to examine if and how religion affects suicidal behavior among mentally ill individuals.

In one study Bonelli and Koenig (2013) did a systematic, evidence-based review of existing data on religion or spirituality and its relationship with psychiatric illness. Researchers used literature from1990 to 2010 to examine original research on religion, religiosity, spirituality, and related terms published in psychiatry and neurology journals. They reported that among the 43 publications that met the inclusion criteria, 31 (72.1 %) found an inverse relationship between level of religious and spiritual involvement and mental disorder, eight (18.6 %) found mixed results (positive and negative relationships), and two (4.7 %) reported more mental disorder. In addition, all studies on dementia, suicide, and stress-related disorders found inverse relationships, as well as 79% and 67 % of the studies on depression and substance abuse, respectively.

Similarly, Tuchman and Weisman (2013) investigated the effect of religion on severity of symptoms of schizoaffective disorder and quality of life and whether seeking social support and

meaning-making coping (finding meaning amidst adversity) mediated the effect. The study sample was 112 individuals with schizophrenia or schizoaffective disorder. Results of structural equation modeling showed that while extrinsic religiosity was associated with seeking social support, it did not relate to either severity of symptoms or quality of life. Also, meaning-making coping significantly mediated the effect of intrinsic religiosity on quality of life.

Taylor, Chatters, and Abelson (2012) explored the relationships between lifetime and 12-month DSM-IV major depressive disorder (MDD) and religious involvement within a nationally representative sample of African American adults (n = 3,570). MDD was assessed using the DSM-IV World Mental Health Composite International Diagnostic Interview. Results of multivariate analyses indicated that reading religious materials was positively associated with 12-month (OR, 1.14; 95% CI, 1.001-1.29) and lifetime (OR, 1.12; 95% CI, 1.03-1.21) MDD. On the other hand, religious service attendance was inversely associated with 12-month and lifetime MDD, and religious coping was inversely associated with 12-month MDD (OR, 0.75, 95% CI, 0.57-0.99).

Mohr and colleagues (2012) administered a semistructured interview to outpatients with a DSM-IV diagnosis of schizophrenia or schizoaffective disorder living in three countries ([N=276] 92 from Geneva, Switzerland, 121 from Trois-Rivières, Canada, and 63 from Durham, North Carolina) to assess the role of spirituality and religiousness in their lives and in coping with their illness. Results indicated that religion provided a positive sense of self and positive coping with the illness among 87% of the participants and was a source of despair and suffering among 13%.

Likewise, Taylor, Chatters, and Nguyen (2012) examined the relationship between religious involvement and 12-month and lifetime DSM-IV MDD within a nationally

representative sample of Black Caribbean adults. MDD was assessed using the DSM-IV World Mental Health Composite International Diagnostic. Religious involvement included measures of religious coping, organizational and nonorganizational religious involvement, and subjective religiosity. Findings showed that religious involvement is associated with 12-month and lifetime prevalence of MDD. Multivariate relationships between religious involvement and MDD indicated lower prevalence of 12-month and lifetime MDD among persons who use religious coping and characterize themselves as being religious while participants who frequently listened to religious radio programs reported higher lifetime MDD than those who do not listen to such programs. Participants who attend religious services at least once a week showed lower rates of 12-month and lifetime MDD.

A couple of these studies found positive relationships between religion and mental illness or both negative and positive relationships, but the majority found an inverse relationship. Results of these studies appear to support the notion that religion protects against mental illness and hence the assumption that if religion could predict positive mental illness outcomes, then it could lower suicidality among mentally ill persons who, studies show, have a greater suicide risk.

CHAPTER 3

METHODS

Hypotheses

1. Over time adolescents emerging into adulthood who identify with a religious tradition would be less likely to report suicidal ideation than their counterparts with no religious identification.
2. Over time adolescents emerging into adulthood reporting a religious affiliation who practice intrinsic religiosity would be less likely to report suicidal ideation than those who practice extrinsic religiosity.
3. Over time adolescents emerging into adulthood who report low parental support, those with depressive symptoms, those with low self-esteem, those who use drugs, those who use alcohol, those with friend or family history of suicidal behavior, or those who report aggressive behavior would be more likely to report suicidal ideation than adolescents without any of these symptoms and behaviors. However, the risk of suicidal ideation would be lower in those who self-report as religiously affiliated.

Human Subjects Approval

Human subject approval for this study was obtained from the Office for the Protection of Human Research Subjects at East Tennessee State University in Johnson City, Tennessee.

Study Samples and Datasets

Data for this study were obtained from the restricted use data file of Add Health, a project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill from 1994 to 2009. The Add Health data were collected for the purpose of measuring the impact of social

environment on adolescent health. The study uses a nationally representative sample of pertinent subpopulations to examine the general health and well-being of adolescents in the US, including, with respect to these adolescents, (1) the behaviors that promote health and the behaviors that are detrimental to health, and (2) the influence on health of factors particular to the communities in which adolescents reside. To protect confidentiality, no paper questionnaires were used. Instead, audio-computer assisted self-interview (ACASI) technology on laptop computers was used for all in-home interviews (Harris, 2011). For more sensitive topics, participants listened through earphones to prerecorded questions and entered the answers directly. For topics that were less sensitive, the interviewer read the questions aloud and entered participants' answers (Harris, 2011). There have been four waves of data collected to date but the current research is focused on Waves I, II, and III:

Wave I (Stage 1) In-School Questionnaire

The In-School Questionnaire, a self-administered instrument formatted for optical scanning, was administered to 90,118 students in grades 7-12 in a 45- to 60-minute class period from September 1994 to April 1995.

Wave I (Stage 2) In-Home (Core) Sample

All students who completed the In-School Questionnaire plus those who did not complete a questionnaire but were listed on a school roster were eligible for selection into the core in-home sample. A total of 20,745 adolescents aged 11-19 in 7^{th} to 12^{th} grades, representing 79% of all sampled students in all of the groups, were interviewed at home from April 1995 to December 1995. This included core sample of 12,105 adolescents and four oversampled ethnic groups (Blacks [n =1,038] from well-educated families [with a parent with a college degree], Chinese [n = 334], Cubans [n = 450], and Puerto Ricans [n = 437]). In addition, the main sample contained

more than 1,500 Mexican-Americans and significant numbers of Nicaraguans, Japanese, South Koreans, Filipinos, and Vietnamese. There were also disabled ([limbs] n = 471) and genetic (identical twins, fraternal twins, half siblings, step-siblings, foster children, and adopted [nonrelated] siblings n = 4,527) samples.

Wave II

One year after the Wave 1 data collection, 14,738 adolescents aged 12-20 in 8th to 12th grades (representing a response rate of 88.6%) were drawn from the Wave I sample and interviewed at home from April 1996 to August 1996 with the following exceptions: participants who were in the 12th grade at Wave I and who were not part of the genetic sample were not interviewed at Wave II; participants who were in only the Wave I disabled sample were not reinterviewed; an additional 65 adolescents who were members of the genetic sample and who had not been interviewed at Wave I were recruited at Wave II.

Wave III

In-home interviews with 15,197 Wave I participants who could be located were completed at Wave III from August 2001 to April 2002 resulting in a 77.4% response rate. The main purpose of the Wave III follow-up was to understand how life as an adolescent is related to life during young adulthood and later adulthood (Harris, 2011). Wave III participants were mainly between 18 and 26 years old, with the exception of 24 of them who were 27-28 years old.

Study Variables

The outcome variable chosen for this study is suicidal ideation of the adolescent. The predictor variable is the level of religiosity (measured by religious affiliation, prayer, service attendance, youth program attendance, and perceived importance of religion) of the adolescent. Parental support and relationships, adolescent self-reported depressive symptoms, suicidal

behavior of family and friends (which is measured by their attempted suicide and suicide deaths), self-esteem, drug use, alcohol use, and aggressive behavior are the major covariates. Age, gender, and race serve as the demographic covariates. A summary of the variables used in this study are presented in Table 1.

Table 1

Study Variables

Outcome variable	**Predictor variables**	**Covariates**	**Demographic covariates**
Suicidal ideation (categorical)	Religiosity (categorical)	Parental support and relationships (categorical) Self-esteem (categorical) Depressive symptoms (categorical) Suicidal behavior of friends and family (categorical) Drug use (categorical) Alcohol use (categorical) Aggressive behavior (categorical)	Age (continuous) Gender (categorical) Race (categorical)

There were seven variables for suicidal behavior in all three waves of the Add Health data: suicidal ideation, suicide attempts, suicide attempts resulting in injury, suicide attempts of

friends, result of suicide attempts by friends, suicide attempts of family members, and result of suicide attempts by family members.

Waves I and II Add Health data on religiosity comprised seven variables denoting religious affiliation, religious service attendance, youth religious activities, importance of religion, frequency of prayer, agreement that religious scriptures are the word of God, and "born again" status of the religious adherent. In Wave III, religiosity questions were expanded to include spirituality measures for a total of 42 variables in all, and included the original seven variables from Waves I and II.

For parental relationship, there were 18 identical variables in Waves I and II of the Add Health data. These included questions about adolescents' perception of extent of parental involvement in their day-to-day lives and long-term decision-making, perception of closeness to parents, and perception of parental care and support. In Wave III there were 89 items for parental relationships including the original 18 from Waves I and II.

Measures of adolescent self-reported depressive symptoms were part of the Feelings Scale of the Add Health data. In Waves I and II, the scale had 19 questions regarding information about the emotional state of participants. In Wave III, there were 24 questions that included the original 19 from Waves I and II.

Measures for respondents' self-esteem were taken from the Add Health Personality and Family questionnaire that asked respondents about their personality, communication with parents, patterns of decision-making, and general life satisfaction. There were six self-esteem measures in Wave I. These were expanded to 12 items for Waves II and III.

The drug and alcohol measures were found in the Add Health Tobacco, Alcohol, and Drugs questionnaire that asked about respondents' experiences with cigarettes, alcohol, and

drugs and their attitudes about their use. There were 30 questions regarding alcohol use, 5 questions about marijuana use, and 3 questions about cocaine use in Waves I and II. Questions regarding alcohol use were expanded in Wave III. In Wave III, there were 62 questions regarding alcohol use, 3 questions about marijuana use, and 3 questions about cocaine use; all items in Waves I and II were included in Wave III.

Measures for aggressive behavior were found in the Fighting and Violence questionnaire of the Add Health data that asked the extent to which respondents had participated in or been victims of physical violence and their level of access to weapons, including firearms. There were 14, 22, and 26 violence-related questions in Wave I, Wave II, and Wave III respectively. All Wave I items were found in Waves II and III.

Measures

Outcome Variable: Suicidal Ideation

In this study suicidal ideation was measured with one question indicating suicidal ideation of participants: "During the past 12 months, did you ever seriously think about committing suicide?" This had a binary response: 'Yes' and 'No'. This item was categorized as 0 = No history of suicidal ideation and 1 = history of suicidal ideation.

Predictor Variable: Religiosity

For this research religiosity is defined as the religious involvement of the adolescent and was measured with five items depicting religious affiliation, religious service attendance, youth religious service attendance, importance of religion to the participant, and frequency of private prayer offered by participants. Questions regarding these different aspects of religiosity were consistent across waves.

Religious Affiliation. In Wave I participants' religious affiliation or denomination was measured with a single item: "What is your religion?" The responses were: 0 = none; with different religious traditions or denominations represented by numerical coding ranging from 1 to 28. In Wave II, a similar pattern was used, except that 29= none. Twenty-one of the Waves I and II responses were related to the Christian religious tradition and the others were Jewish, Buddhist, Eastern Orthodox, Hindu, Islam, Unitarian, and other religions. In Wave III the Christian religion response options were combined, there were eight response options that included all the seven religions enumerated above and Christian. In the current study these items were combined into a dichotomous variable, classifying participants in each wave as: 0 = nonreligious and 1= religious (if they answered yes to any religion).

Religious Service and Youth Program Attendance. Religious service attendance was measured by attendance at regular religious services and religious programs specifically for youth. The items were: "In the past 12 months, how often did you attend religious services?" and "Many churches, synagogues, and other places of worship have special activities for teenagers—such as youth groups, Bible classes, or choir. In the past 12 months, how often did you attend such youth activities?" The response options for both questions were: 1 = once a week or more, 2 = once a month or more, but less than once a week, 3 = less than once a month, and 4 = never. These were divided into a two-level summary score: 1 = attends religious services or special religious services for youth and 0 = never attends religious services or never engages in special religious programs for youth.

Importance of Religion. Importance of religion was measured with the question: "How important is religion to you?" The following were the response options: 1 = very important, 2 = fairly important, 3 = fairly unimportant and 4 = not important at all. These were divided into a

two-level summary score: 0 = considers religion as fairly unimportant or not important at all, and 1 = at least considers religion as fairly important.

Frequency of Prayer. The question denoting participants' frequency of prayer was: "How often do you pray?" The following were the answer choices: 1 = at least once a day, 2 = at least once a week, 3 = at least once a month, 4 = less than once a month, and 5 = never. These were divided into a two-level summary score: 0 = never prays and 1 = prays.

Religiosity was further categorized into intrinsic religiosity or private religious participation and extrinsic religiosity or public religious participation in this study. Intrinsic religiosity was measured with items depicting importance of religion to participants and participants' frequency of prayer; while extrinsic religiosity was measured by participants' frequency of religious service and youth program attendance as in a previous study (Nonnemaker et al., 2003).

Covariates

The main covariates were selected based on their demonstrated relationship with suicidal behavior. The covariates were parental support and relationships, depressive symptoms, self-esteem, aggressive behavior, drug use, alcohol use, and suicidal behavior of family and friends.

Parental Support and Relationships. Measures for parental support and relationships examined the extent of parental relations with adolescents and adolescents' perceived love and care received from parents. Questions regarding parents' – mother or father – relationship with adolescents in all three waves were: "How close do you feel to your mother/adoptive mother/stepmother/ foster mother/etc.?" "How close do you feel to your father/adoptive father/stepfather/ foster father/etc.?" Response options for both were 1 = not at all, 2 = very little, 3 = somewhat, 4 = quite a bit, and 5 = very much. Questions relating to perceived support from

parents in Waves I and II were: “How much do you think she or he cares about you?” Response options were: 1 = not at all, 2 = very little, 3 = somewhat, 4 = quite a bit, and 5 = very much. In Wave III, this item was slightly modified to read: “Most of the time, he/she (current residential father or mother) is warm and loving toward you.” Response options were: 1= strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, and 5 = strongly disagree. A two-level summary score was created for both questions in Waves I and II: 0 = at most somewhat close to parents or receive parental care; and 1= at least quite a bit close with parents or receive at least quite a bit of parental care. In Wave III, the question regarding perceived love and care received from parents had these summary scores: 0 =at most neither agree nor disagree that parents show love and warmth most of the time and 1= at least agree that parents show love and warmth most of the time. These variables were then combined and categorized as 1 = poor parental relationship and 0 = good parental relationship to have consistency in the coding as the negative characteristics of the other variables are coded as 1.

Depressive Symptoms. One item measuring participants’ depressive symptoms was used. The question was “How often was each of the following things true during the past week? You felt depressed”. The response options were: 0 = never or rarely, 1 = sometimes, 2 = a lot of the time, and 3 = most of the time or all of the time. This was dichotomized as: 0 = never or rarely depressed and 1 = depressed at least sometimes. This was then categorized as 0 = no depressive symptoms and 1 = presence of depressive symptoms.

Self-Esteem. Participants’ self-esteem was measured by one item: “You like yourself just the way you are”. This had the response options: 1= strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, and 5 = strongly disagree. A two-level summary score was created for each question: 0 = neither agree nor disagree, disagree, and strongly disagree that one likes

oneself just the way one is, and 1 = agree or strongly agree that one likes oneself just the way one is. Again, to maintain consistency in the coding as the negative characteristics of the other variables are coded as 1, this was further categorized as 1 = low self-esteem and 0 = high self-esteem.

Aggressive Behavior. Three items were used to measure aggressive behavior of participants: "During the past 30 days, on how many days did you carry a weapon – such as a gun, knife, or club – to school?"; "In the past 12 months, how often did you go into a house or building to steal something?"; and "In the past 12 months, how often did you use or threaten to use a weapon to get something from someone?" Response options for each question were: 0 = never, 1= 1 or 2 times, 2 = 3 or 4 times, and 3 = 5 or more times. These were dichotomized as 0 = never carried a weapon to school or never went into a house to steal something or never used or threatened to use a weapon to get something from someone; and 1 = carried a weapon or went into a house to steal something or used or threatened to use a weapon to get something from someone at least 1 or 2 times. These items were then combined and categorized as 0 = no aggressive behavior (representing the lower end of their summary scores) and 1 = presence of aggressive behavior (representing the upper end of their summary scores).

Alcohol Use. One item was used to measure participants' alcohol use. The question: "Have you had a drink of beer, wine, or liquor – not just a sip or a taste of someone else's drink – more than 2 or 3 times in your life?" had the response options: 0 = no and 1 = yes. This was dichotomized into 0 = never drank alcohol and 1 = have ever drank alcohol.

Drug Use. Two items were used to measure participants' drug use. These questions were asked: "How old were you when you tried marijuana for the first time? and "How old were you when you tried any kind of cocaine – including powder, freebase, or crack cocaine – for the first

time? The response options for both were: 0 = never and age 1 to age 18 years and above represented by numerical coding ranging from 1 to 18 (each number represents the age of first marijuana or cocaine use). Both items were dichotomized into 0 = never used marijuana or never used cocaine and 1 = any age at first use of marijuana and any age at first use of cocaine. These items were then combined and categorized as 0 = no history of drug use (representing the lower end of their summary scores) and 1 = history of drug use (representing the upper end of their summary scores).

Suicidal Behavior of Family and Friends. Suicidal behavior of family and friends was measured by suicide attempts and suicide deaths of family and friends. Questions as regards suicide attempts and suicide death of family members were: "Have any of your family tried to kill themselves during the past 12 months?" "Have any of them succeeded?" Questions about suicide attempts and suicide death of friends were: "Have any of your friends tried to kill themselves during the past 12 months? Have any of them succeeded? Each of these questions had these response choices: 0 = No and 1 = Yes. These two items were then combined and suicidal behavior of family and friends of participants in each wave was classified as 0 = no family or friends suicide or suicide attempt reported and 1 = reporting family or friends' suicide attempt or suicide deaths or both for this study.

In Table 2 is a summary description of the variables. The full list of variables, their description, and coding can be found in the Appendix.

Table 2

Summary Description of Variables Used

Scales	**Number of Items**	**Item Examples and Response Options**
Suicidal Ideation	1	During the past 12 months, did you ever seriously think about committing suicide? (0 = no, 1 = yes)
Religiosity	5	In the past 12 months, how often did you attend religious services? (1 = once a week or more, 4 = Never) How often do you pray? (1= at least once a day, 5 = never)
Parental Support and Relationships	4	How close do you feel to your (mother/adoptive mother/step-mother/foster mother/etc.)? (1 = Not at all, 5 = Very Much) How much do you think she cares about you? (1 = Not at all, 5 = Very Much)
Suicidal behavior of friends and family	4	Have any of your friends tried to kill themselves during the past 12 months? (0 = no, 1 = yes)
Depressive Symptoms	1	How often was each of the following things true during the past week? …you felt depressed (0 = never or rarely, 3 = most of the time or all of the time)
Self-esteem	1	You like yourself just the way you are (1= strongly agree, 5 = strongly disagree)
Aggressive Behavior	3	During the past 30 days, on how many days did you carry a weapon—such as a gun, knife, or club—to school? (0 = none, 4 = 6 or more times)
Alcohol Use	1	Have you had a drink of beer, wine, or liquor—not just a sip or a taste of someone else's drink—more than 2 or 3 times in your life?
Drug Use	2	Since {MOLI}, have you tried or used marijuana? (0 = no, 1 = yes) Note: *MOLI is an abbreviation used to denote the month and year of last interview, taken from the first in-home interview.*

Data Preparation

At the outset descriptions of the instruments used to gather the raw data, other related documents including the description of the summary variables calculated from the raw data, the data collection forms, and documentation of the study procedures were reviewed. Each variable of interest was located from within the full variable list. Data from the study variables were available in different files. These were merged into one file to create a working data file. The data were then checked for inconsistencies and outliers. Missing, minimum, and maximum values were also checked for accuracy of the data.

Statistical Analyses

The statistical analyses were done with SAS 9.2 software (SAS Institute, Cary, NC). Specifically: analysis of the individual variables was done using univariate models; then bivariate and multivariate analyses using logistic regression modeling were performed. P-values less than or equal to .05 were considered significant.

Univariate Analysis

Insights about the study sample were acquired through descriptive statistics from Waves I, II, and III. To describe and to determine the representativeness of the data, suicidal ideation, religiosity, parental support, depressive symptoms, aggressive behavior, self-esteem, drugs use, alcohol use, suicidal behavior of friends and family, gender, and race were analyzed to yield frequencies and percentages. Participant age was analyzed to yield mean, median, and standard deviation.

Bivariate Analysis

Religiosity, other risk factors, and suicidal ideation of the adolescent were assessed in all three waves. To determine the relationship between suicidal ideation and religiosity and between

suicidal ideation and potential risk factors of suicide, simple logistic regression was used. The variables that were presumed to be potential risk factors were: poor parental support and relationship, adolescent depressive symptoms, adolescent low self-esteem, adolescent drug and alcohol use, suicidal behavior of family and friends of the adolescent, and aggressive behavior of the adolescent. Age, gender (male, female), and race (Black, White, Other races) were the demographic covariates.

Multivariate Analysis

Lastly, multiple logistic regression was used for the multivariate analysis. Because age was significantly correlated with suicidal behavior, age was controlled for in the first step of the subsequent logistic regression analyses prior to entering the risk factors to test their relative contribution to the likelihood of suicidal ideation in all the waves. Three logistic regression models were used to address the aims of the study (see Table 3).

To test the hypothesis that being affiliated with a religious group would be associated with lower suicidal ideation, the multivariate associations of suicidal ideation, religiosity, and the demographic covariates were examined in all three waves.

To test the hypothesis that intrinsic religiosity and extrinsic religiosity would be negatively correlated with suicidal ideation and that the suicidal ideation risk would be lesser for those who practice intrinsic religiosity than for those who practice extrinsic religiosity, the multivariate associations of suicidal ideation, intrinsic religiosity, extrinsic religiosity, and demographic variables were examined in all three waves.

To assess the hypothesis that suicide risk factors chosen for this study would be positively correlated with suicidal ideation and that the risk would be lower when religiosity is

present, first the relationships among the risk factors were examined; and then in the second step of the analysis, religiosity was introduced into the model and the relationships tested.

Table 3

Models Used to Address Study Aims and Hypotheses

Model	Aim	Measures	Hypotheses
1	To evaluate the strength and direction of relationship between childhood religiosity and later suicidal ideation	age, race, gender, religious affiliation, suicidal ideation	Over time, adolescents emerging into adulthood who Identify with a religious tradition would report fewer suicidal ideation than their counterparts with no religious identification
2	To examine if there is a difference in the strength and direction of relationship between intrinsic and extrinsic religiosity and suicidal ideation	Age, race, gender, intrinsic religiosity (frequency of prayer and importance of religion), extrinsic religiosity (youth religious program attendance and religious service attendance), and suicidal ideation	Over time, adolescents emerging into adulthood reporting religious affiliation who practice intrinsic religiosity would report fewer suicidal ideation than those who practice extrinsic religiosity
3 (Step 1)	To examine the strength and direction of relationship between parental support, depressive symptoms, self-esteem, drug use, alcohol use, suicidal behavior of family and friends, and aggressive behavior and suicidal ideation	Age, race, gender, parental support and relationships, depressive symptoms, self-esteem, drug use, alcohol use, aggressive behavior, and suicidal behavior of family and friends	Over time, adolescents emerging into adulthood who report low parental support, those with depressive symptoms, those with low self-esteem, those who use drugs, those who use alcohol, those with friend or family history of suicidal behavior, or those who report aggressive behavior would report more suicidal ideation than adolescents without any of these symptoms and behaviors
3 (Step 2)	To examine the strength and direction of these relationships when religiosity is added.	Age, race, gender, parental support and relationships, depressive symptoms, self-esteem, drugs use, alcohol use, aggressive behavior, suicidal behavior of family and friends, and religious affiliation	However, the risk of suicidal ideation would be lower in those who self-report as religiously affiliated

CHAPTER 4

RESULTS

Univariate Statistics

Background information of participants was obtained at each wave of the data collection. Tables 4, 5, and 6 illustrate the demographic characteristics of participants in all three waves. The average age of participants was 15, 16, and 22 years of age in Waves I, II, and III respectively. There were slightly more females than males in each wave. Also, slightly more than half of the participants in each wave were white. African Americans represented approximately 21% of participants and all other races were approximately 28% in each wave.

Table 4

Age of Participants in Waves I, II, and III

Wave	**N**	**Mean**	**SD**	**Minimum**	**Maximum**
Wave I	20,745	15.66	1.75	11.00	21.00
Wave II	14,738	16.23	1.64	12.00	22.00
Wave III	15,197	21.96	1.77	18.00	28.00

Table 5

Gender of Participants in Waves I, II, and III

Variable	**Wave I N=20,745**		**Wave II N=14,738**		**Wave III N=15,197**	
	N	**%**	**N**	**%**	**N**	**%**
Gender						
Male	10,263	49.47	7,182	48.73	7,167	47.16
Female	10,481	50.53	7,556	51.27	8,030	52.84

Table 6

Race of Participants in Waves I, II, and III

Variable	**Wave I N=20,745**		**Wave II N=14,738**		**Wave III N=15,197**	
	N	**%**	**N**	**%**	**N**	**%**
White	10,455	50.45	7,573	51.43	7,890	51.97
Black	4,320	20.85	2,991	20.31	3,153	20.77
Other (races)	5,949	28.71	4,162	28.26	4,139	27.27

Table 7 gives the prevalence of suicidal ideation, suicide attempts, and religiosity of participants in Waves I, II, and III. There was a reduction in the prevalence of suicidal ideation as participants moved through the waves. Prevalence was 13% in Wave I, 11% in Wave II, and 6% in Wave III. The prevalence of each of the five religiosity measures decreased as participants progressed through the different waves.

Table 7

Descriptive Statistics of Suicidal Ideation and Religiosity Measures Used in the Analyses for Waves I, II, and III

	Wave I N=20,745		**Wave II N=14,738**		**Wave III N=15,197**	
	N	**%**	**N**	**%**	**N**	**%**
Suicidal ideation						
Yes: 1	2,748	13.40	1,570	10.72	891	6.03
No: 0	17,753	86.60	13,075	89.28	13,897	93.97
Religiosity Measures						
Religious affiliation						
Yes:1	17,812	87.58	12,610	86.94	12,126	81.15
None: 0	2,526	12.42	1,894	13.06	2,817	18.85
Religious service attendance						
Yes: 1	15,471	86.91	10,879	86.41	11,057	73.30
Never: 0	2,330	13.09	1,711	13.59	4,028	26.70

Table 7 (continued)

	Wave I N=20,745		**Wave II N=14,738**		**Wave III N=15,197**	
	N	**%**	**N**	**%**	**N**	**%**
Youth religious program attendance						
Yes: 1	9,889	55.44	6,650	52.82	3,883	25.76
Never: 0	7,915	44.46	5,934	47.16	11,193	74.24
Importance of religion						
At least fairly important: 1	15,898	89.32	11,051	87.82	12,826	85.23
At least fairly Unimportant: 0	1,901	10.68	1,532	12.18	2,222	14.77
Frequency of prayer						
Prays:1	16,414	92.22	11,513	91.44	11,887	78.82
Never Prays: 0	1,385	7.78	1,078	8.56	3,194	21.18

Descriptive statistics for the covariates are displayed in Table 8. The prevalence of perceived lack of parental care and support was generally mixed among participants in all three waves. There was a slight decrease in the prevalence of some of the measures of parental care and support and an increase in some measures from Wave I through Wave III. The proportion of participants who believed they were not close with their mother increased slightly in Wave II but reduced slightly in Wave III. The proportion of participants who perceived that their mother did not care about them increased gradually in slight variations from Wave I to Wave III. For perception of detachment from father, the proportion increased in Wave II but decreased in Wave III. For prevalence of lack of fatherly care, there was a gradual increase from Wave I to Wave III.

By and large the prevalence of attempted suicide and suicide deaths was higher among friends than among family members of participants. While the prevalence of suicide attempt among friends and family decreased through the waves, the prevalence of successful suicide of friends and family who had attempted suicide increased progressively. The prevalence of attempted suicide among friends in the year preceding the survey was approximately 18%, 14%, and 7% in Waves I, II, and III respectively; while that of family members was approximately 5%, 4%, and 3% in Waves I, II, and III respectively. For suicide deaths among friends and family who had previously attempted suicide, the prevalence was approximately 17%, 20%, and 36% in Waves I, II, and III respectively for friends; and 20%, 26%, and 26% in Waves I, II, and III respectively among family members.

Prevalence of depressive symptoms and low self-esteem among participants also decreased from Wave I through Wave III. Prevalence of depressive symptoms in the week preceding the survey was approximately 60%, 40%, and 27% in Waves I, II, and III respectively.

Prevalence of low self-esteem was approximately 23%, 21%, and 18% in Waves I, II, and III respectively.

There was a general decrease in the prevalence of aggressive behavior (burglary, weapon use, and weapon access) among participants as they progressed through the different waves. The proportion of participants with a history of burglary at least one time was approximately 5%, 4%, and 2% in Waves I, II, and III respectively; for weapon use at least one time, the proportion was approximately 4%, 4%, and 2% in Waves I, II, and III respectively; and for access to weapons it was approximately 5%, 5%, and 1% in Waves I, II, and III respectively.

For drugs and alcohol use there was a decrease in the prevalence from Wave I to Wave II, but the prevalence increased in Wave III. The prevalence of alcohol use among participants was approximately 57%, 47%, and 77% in Waves I, II, and III respectively. For marijuana use the prevalence was approximately 29%, 26%, and 44% in Waves I, II, and III respectively. Finally, cocaine use had the following prevalence among participants: 4%, 3%, and 10% in Waves I, II, and III respectively.

Table 8

Descriptive Statistics for the Covariates Used in the Analyses for Waves I, II, and III

Covariates	**Wave I N=20,745**		**Wave II N=14,738**		**Wave III N=15,197**	
	N	**%**	**N**	**%**	**N**	**%**
Parental support and relationships						
Closeness with mother						
At most somewhat close: 0	2,245	11.53	1,878	13.75	774	12.32
At least quite a bit close : 1	17,224	88.47	11,782	86.25	5,509	87.68

Table 8 (continued)

Covariates	**Wave I N=20,745**		**Wave II N=14,738**		**Wave III N=15,197**	
	N	**%**	**N**	**%**	**N**	**%**
Care received from mother						
At most somewhat cares: 0	592	3.04	580	4.25	465	6.13
At least cares quite a bit: 1	18,871	96.96	13,076	95.75	5,898	93.87
Closeness with father						
At most somewhat close: 0	2,959	20.49	2,825	27.04	962	20.85
At least quite a bit close : 1	11,483	79.51	7,621	72.96	3,652	79.15
Care received from father						
At most somewhat cares: 0	864	5.99	812	7.78	493	10.68
At least cares quite a bit: 1	13,571	94.01	9,619	92.22	4,123	89.32
Suicidal behavior of friends and family						
Friends' suicide attempt						
Yes: 1	3,551	17.36	2,029	13.89	990	6.71
No: 0	16,903	82.64	12,582	86.11	13,765	93.29
Suicide deaths of friends (among friends who had previously attempted suicide)						
Yes: 1	615	17.34	421	20.78	351	35.60
No: 0	2,931	82.66	1,605	79.22	635	64.40
Family suicide attempt						
Yes: 1	926	4.52	507	3.47	423	2.87
No: 0	19,557	95.48	14,118	96.53	14,335	97.13

Table 8 (continued)

Covariates	**Wave I N=20,745**		**Wave II N=14,738**		**Wave III N=15,197**	
	N	**%**	**N**	**%**	**N**	**%**
Suicide deaths of family (among family who had previously attempted suicide)						
Yes: 1	185	20.02	131	25.94	111	26.43
No: 0	739	79.98	374	74.06	309	73.57
Depressive Symptoms						
Yes: 1	8,355	59.62	5,812	39.48	4,018	26.47
No: 0	12,338	40.38	8,910	60.52	11,161	73.53
Self-esteem						
At least agree: 0	15,913	76.98	11,652	79.15	12,475	82.16
At most neither agree nor disagree: 1	4,759	23.02	3,069	20.85	2,708	17.84
Aggressive behavior						
History of burglary						
One or more times: 1	1,076	5.23	584	3.98	282	1.87
Never: 0	19,492	94.77	14,077	96.02	14,788	98.13
Weapon use						
One or more times: 1	878	4.27	526	3.59	306	2.03
Never: 0	19,690	95.73	14,141	96.41	14,761	97.97
Access to weapons						
One or more times: 1	1,004	4.88	678	4.62	217	1.44
Never: 0	19,574	95.12	13,996	95.38	14,882	98.56

Table 8 (continued)

Covariates	Wave I N=20,745		Wave II N=14,738		Wave III N=15,197	
	N	%	N		N	%
Alcohol use						
Yes: 1	11,609	56.52	6,930	47.33	11,525	76.86
No: 0	8,930	43.48	7,711	52.67	3,470	23.14
Marijuana use						
Yes: 1	5,831	28.53	3,822	26.10	6,614	44.25
No: 0	14,605	71.47	10,819	73.90	8,332	55.75
Cocaine use						
Yes: 1	697	3.41	360	2.46	1,481	9.89
No: 0	19,731	96.59	14,276	97.54	13,500	90.11

Bivariate Statistics

Results of the bivariate analysis are presented in Table 9. The results are also presented by waves in this section.

Wave I

All of the study variables have significant bivariate correlations with suicidal ideation in Wave I. Results show that a unit increase in age makes it more likely to have suicidal ideation by about 5%; females are about 72% more likely to have suicidal ideation than males; African Americans are about 28% less likely to have suicidal ideation than Whites; and all the other races together are about 16% more likely to have suicidal ideation than Whites.

All the religiosity measures were negatively correlated with suicidal ideation; meaning participants who were positive for any of the five religiosity measures were less likely to have suicidal ideation than participants who were negative for the religiosity measures. Participants who report belonging to a religious tradition were about 29% less likely to have suicidal ideation than those who belonged to no religious tradition; those who report attending religious services at all were about 21% less likely to have suicidal ideation than those who reported never attending; participants who report ever attending religious programs for youth were about 10% less likely to have suicidal ideation; participants who claim religion is important or very important are 35% less likely to have suicidal ideation than those who rated it as less important or unimportant; participants who reported praying at least once a month were 20% less likely to have suicidal ideation than those who reported none at all; also participants who reported practicing extrinsic religiosity were 21% less likely to have suicidal ideation; while those who reported practicing intrinsic religiosity are about 32% less likely to have suicidal ideation.

Participants who reported poor parental support and relationship were about 4 times more likely to have suicidal ideation than those who reported good parental relationships. Participants who reported family members or friends ever attempted suicide or completed suicides were almost 4 times more likely to have suicidal ideation than those without such history.

Participants who reported depressive symptoms were a little over 4 times more likely to have suicidal ideation than those who reported no depressive symptoms; while those with low self-esteem were almost 4 times more likely to have suicidal ideation than those who reported high self-esteem.

Participants who reported aggressive behavior (i.e. robbery, weapon access, and weapon use), were 2-3 times more likely to have suicidal ideation than participants who reported no

aggressive behavior. Participants who reported using drugs or alcohol were almost 3 times more likely to report suicidal ideation than those who reported no drug or alcohol use.

Wave II

In Wave II almost all the study variables have significant bivariate relationships with suicidal ideation. Results show that a unit increase in age makes it less likely to have suicidal ideation by about 6%; females were 71% more likely to have suicidal ideation than males; African Americans were about 37% less likely to have suicidal ideation than Whites; result for suicidal ideation among other races was not significant.

Participants who reported belonging to a religious tradition were about 34% less likely to have suicidal ideation than those who did not belong to any religious tradition; those who reported attending religious services less than once a month were 24% less likely to have suicidal ideation than those who reported never attending; participants who claimed religion was either important or very important were 32% less likely to have suicidal ideation than those who rated religion as unimportant; participants who prayed at least once a month were 22% less likely to have suicidal ideation than participants did not pray at all; those who reported practicing extrinsic religiosity were 21% less likely to have suicidal ideation than those who responded negatively to any of the extrinsic religiosity measures; while those who reported practicing intrinsic religiosity were about 27% less likely to have suicidal ideation than those who responded negatively to any of the intrinsic religiosity measures. The analysis of youth religious program attendance did not produce significant results.

Participants who reported poor parental relationships were almost 5 times more likely to have suicidal ideation than those who reported good parental relationship; those who reported

family members or friends had ever attempted suicide or suicide deaths were almost 5 times more likely to have suicidal ideation than those with no such history.

Participants who reported depressive symptoms were more than 4 times more likely to have suicidal ideation than those who did not report depressive symptoms; while those with low self-esteem were more than 3 times more likely to have suicidal ideation than those who reported high self-esteem.

Participants who reported self-initiated aggressive behavior were about 3 times more likely to have suicidal ideation than participants who reported no aggressive behavior. Participants who reported alcohol use were a little over 2 times more likely to have suicidal ideation than those who reported no alcohol use; and those who reported using drugs were almost 3 times more likely to have suicidal ideation than those who reported no drug use.

Wave III

In Wave III several of the study variables (except gender, other races, prayer, and access to weapons) have significant bivariate relationships with suicidal ideation.

Results of the unadjusted models show that a unit increase in age makes it less likely to have suicidal ideation by about 10%; African Americans are about 32% less likely to have suicidal ideation than Whites; analyses for suicidal thought for other races and for gender did not produce significant results.

Participants who reported they were religiously affiliated were about 33% less likely to have suicidal ideation than those who reported no religious affiliation; those who reported attending religious services at least once a month were 24% less likely to have suicidal ideation than those who reported no attendance at all; participants who attended religious programs for youth at least once a month were 25% less likely to have suicidal ideation than those who

reported no youth program attendance; participants who believed religion was either important or very important were 30% less likely to have suicidal ideation than those who believed religion was unimportant; participants who reported practicing extrinsic religiosity were 24% less likely to have suicidal ideation than those reported they do not practice extrinsic religiosity; while those who reported practicing intrinsic religiosity were about 22% less likely to have suicidal ideation than those who reported not practicing intrinsic religiosity. Bivariate analysis of frequency of prayer and suicidal ideation had non-significant results.

Participants who reported poor parental support and relationship were about 3 times more likely to have suicidal ideation than those who reported good parental relationship; participants who reported family members or friends had ever attempted suicide or died of suicide were 4 times more likely to have suicidal ideation than those reported no such history.

Participants who reported depressive symptoms were more than 5 times more likely to have suicidal ideation than those who reported no depressive symptoms; while those who reported low self-esteem were almost 5 times more likely to have suicidal ideation than those who reported high self-esteem.

Participants who reported self-initiated aggressive behavior were about 3 times more likely to have suicidal ideation than those who reported no aggressive behavior. Participants who reported using cocaine or marijuana were over 3 times more likely to have suicidal ideation than those who reported no cocaine or marijuana use; and participants who reported alcohol use were almost 3 times more likely to have suicidal ideation than those reported no alcohol use.

Table 9

Simple Logistic Regression Analyses of the Relationship between Religiosity and Suicidal Ideation and the Covariates and Suicidal Ideation in Waves I, II, and III

Variables	**Wave I N=20,745**			**Wave II N=14,738**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Demographic Characteristics									
Age	1.047	1.023, 1.071	< . 01	0.966	0.935, 0.997	< . 05	0.902	0.868, 0.937	< .01
Female	1.717	1.581, 1.864	< . 01	1.710	1.535, 1.905	< . 01	1.107	0.966, 1.268	n/s
Black	0.715	0.642, 0.796	< . 01	0.630	0.540, 0.734	< .01	0.682	0.563, 0.827	< .01
Other Races	1.160	1.063, 1.265	< . 01	1.010	0.897, 1.137	n/s	0.916	0.782, 1.073	n/s
Religiosity Measures									
Religious affiliation	0.712	0.636, 0.796	< . 01	0.661	0.574, 0.760	< .01	0.665	0.568, 0.779	< .01
Religious service attendance	0.786	0.695, 0.889	< . 01	0.760	0.650, 0.890	< . 01	0.758	0.655, 0.877	< .01
Youth program attendance	0.899	0.823, 0.982	< . 05	0.940	0.837, 1.056	n/s	0.747	0.632, 0.882	< .01
Importance of religion	0.649	0.571, 0.737	< . 01	0.678	0.578, 0.795	< . 01	0.701	0.589, 0.833	< .01
Prayer	0.803	0.688, 0.937	.01	0.776	0.641, 0.940	. 01	0.903	0.768, 1.062	n/s

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

Table 9 (continued)

Variables	Wave I N=20,745			Wave II N=14,738			Wave III N=15,197		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Extrinsic religiosity	0.887	0.812, 0.968	. 01	0.793	0.672, 0.936	< . 01	0.756	0.653, 0.875	< .01
Intrinsic religiosity	0.683	0.610, 0.765	< . 01	0.729	0.571, 0.931	.01	0.783	0.642, 0.955	< .05
Social Environment									
Low parental relationship	4.224	3.383, 5.275	< . 01	4.739	3.578, 6.276	< . 01	3.052	2.317, 4.020	< .01
Suicidal behavior of friends and family	3.823	3.508, 4.166	< . 01	4.828	4.311, 5.406	< . 01	4.134	3.506, 4.875	< .01
Emotional Characteristics									
Depressive symptoms	4.346	3.982, 4.745	< . 01	4.296	3.832 , 4.816	< . 01	5.038	4.378, 5.798	< .01
Low self-esteem	3.567	3.280, 3.879	< . 01	3.520	3.156, 3.926	< . 01	4.562	3.969, 5.244	< .01
Self-initiated Aggressive Behavior									
History of robbery	2.866	2.495, 3.293	< . 01	2.773	2.274, 3.381	< . 01	3.305	2.388, 4.572	< .01
Weapon use	3.164	2.724, 3.674	< . 01	3.145	2.569, 3.850	< . 01	3.797	2.815, 5.120	< .01
Access to weapons	3.011	2.637, 3.437	< . 01	2.974	2.475, 3.573	< . 01	1.312	0.771, 2.231	n/s
Aggressive Behavior	2.942	2.661, 3.253	< . 01	2.908	2.527, 3.347	< . 01	2.803	2.220, 3.539	< .01
Alcohol use	2.451	2.239, 2.683	< .01	2.168	1.944, 2.417	< .01	2.461	1.992, 3.042	< .01

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

Table 9 (continued)

Variables	**Wave I N=20,745**			**Wave II N=14,738**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Drug use	2.561	2.358, 2.780	< . 01	2.840	2.552, 3.161	< . 01	3.165	2.729, 3.669	< .01

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

Multivariate Statistics

Hypotheses Testing

Multiple logistic regression analyses were used to address the study hypotheses across waves. Results for the three hypotheses are presented in Tables 9-12. Table 9 addresses Hypothesis 1, Table 10 addresses Hypothesis 2, Table 11 addresses Step 1 of Hypothesis 3, and Table 12 addresses Step 2 of Hypothesis 3.

Hypothesis 1: Over Time Adolescents Emerging into Adulthood who Identify With a Religious Tradition Would Be Less Likely to Report Suicidal Ideation than Their Counterparts with No Religious Identification.

As hypothesized, results indicated that participants who reported religious affiliation were 30%-36% less likely to have suicidal ideations in the different waves of data collection; the highest variance was recorded in Wave II (see Table 10).

Table 10 (Model 1)

Multiple Logistic Regression Analyses of the Relationship Among Religious Affiliation, Suicidal Ideation, and Demographic Covariates in Waves I, II, and III

Variable	**Wave I N= 20,728**			**Wave II N=14,737**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Demographic Characteristics									
Age	1.049	1.024, 1.074	< .01	0.966	0.935, 0.998	< .05	0.902	0.868, 0.938	< .01
Gender (Female)	1.756	1.615, 1.909	< .01	1.741	1.560, 1.943	< .01	1.116	0.972, 1.282	n/s
Black	0.737	0.657, 0.826	< .01	0.640	0.548, 0.747	< .01	0.712	0.586, 0.866	< .01
Other	1.074	0.979, 1.179	n/s	1.057	0.936, 1.192	n/s	0.981	0.836, 1.152	n/s
Religious affiliation	0.701	0.626, 0.786	< .01	0.644	0.559, 0.755	< .01	0.682	0.582, 0.800	< .01

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

Hypothesis 2: Over Time Adolescents Emerging into Adulthood Reporting a Religious Affiliation Who Practice Intrinsic Religiosity Would Be Less Likely to Report Suicidal Ideation than Those Who Practice Extrinsic Religiosity

The results of the test of hypotheses were mixed in terms of the significance of the relationships. The hypothesis held true in Wave II, was partially supported in Wave I, but was not supported in Wave III. As hypothesized, although both intrinsic religiosity and extrinsic religiosity were negatively related to suicidal ideations, the variance was higher for adolescents who practice intrinsic religiosity in Waves I and II. However, in Wave I, there was no significant relationship between extrinsic religiosity and suicidal ideations. Also in Wave III, intrinsic religiosity was excluded from the analysis as it did not meet the required significance for entry into the model (see Table 11).

Table 11 (Model 2)

Multiple Logistic Regression Analyses of the Relationships Between Intrinsic Religiosity and Suicidal Ideation, and Extrinsic Religiosity and Suicidal Ideation in Waves I, II, and III

Variable	**Wave I N= 20,728**			**Wave II N=14,737**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Demographic Characteristics									
Age	1.046	1.019, 1.073	< .01	0.964	0.930, 0.999	<. 05	0.902	0.868, 0.938	< .01
Gender (Female)	1.869	1.705, 2.049	< .01	1.798	1.592, 2.030	< .01	1.116	0.972, 1.284	n/s
Black	0.766	0.678, 0.866	< .01	0.643	0.543, 0.761	< .01	0.711	0.584, 0.865	< .01
Other	1.055	0.954, 1.168	n/s	1.032	0.903, 1.178	n/s	0.980	0.835, 1.150	n/s
Intrinsic Religiosity	0.669	0.592, 0.756	< .01	0.741	0.570, 0.964	< .05	+		
Extrinsic Religiosity	0.982	0.894, 1.080	n/s	0.805	0.673, 0.963	<. 05	0.764	0.659, 0.886	< .01

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant
+ No (additional) effects met the 0.05 significance level for entry into the model.

Hypothesis 3: Over Time Adolescents Emerging into Adulthood Who Report Poor Parental Relationship, Those With Depressive Symptoms, Those with Low Self-Esteem, Those Who Use Drugs, Those Who Use Alcohol, Those with Friend or Family History of Suicidal Behavior, or Those Who Report Aggressive Behavior Would Be More Likely to Report Suicidal Ideation than Adolescents Without Any of These Symptoms and Behaviors. However, the Risk of Suicidal Ideation Would Be Lower in Those Who Self-Report as Religiously Affiliated

Multiple logistic regression analysis was performed to assess the statistical influence of a number of risk factors on suicidal thoughts of the adolescent emerging into adulthood, and changes, if any, to these impacts with the addition of religiosity. The analysis contained two steps - Step 1 had all the risk factors, demographic covariates, and suicidal ideation; and Step 2 included the addition of religiosity, measured by religious affiliation.

As hypothesized, in the first step of the analyses, which excluded religiosity, each of the selected risk factors had a significantly positive relationship with suicidal thoughts in all three waves of data collection. As shown in Table 12, the strongest predictor of reporting suicidal thoughts were past suicide attempts by family and friends and suicide deaths of family and friends, presence of depressive symptoms, low self-esteem, and poor parental support and relationships, recording odds ratios between 2.2 and 3.3. However, in this model, the relationships between suicidal ideations and some of the demographic covariates were not significant; specifically, the relationship between other races and suicidal thoughts was not significant in any of the three waves. Also, age was not a predictor of suicidal ideation in Wave I; and the female gender did not predict suicidal thoughts in Wave III.

In the full model that included religiosity (see Table 13) almost all the risk factors were positively related to suicidal ideation in each wave of data collection, with the exception of self-

initiated aggressive behavior that was not significant in Wave III. The strongest predictors of suicidal ideation again were: past suicidal behavior of family and friends, presence of depressive symptoms, low self-esteem, and poor parental support and relationships; recording odds ratios between 2.2 and 3.2. Religiosity, defined as religious affiliation, had a negative significant relationship with suicidal ideation in Waves I and II. With the exception of age, none of the demographic covariates met significance to be included in the Wave III analysis. Nonsignificant relationships were also recorded for age in Wave I and for other races in Waves I and II.

To test the impact of religiosity on the risk factors with its addition into the model, the variance of the risk in Step 1 and Step 2 of the model was examined. The hypothesis that religiosity would reduce the impact of the risk factors on suicidal ideation was not fully supported in the analysis as presented in Table 14. With the exception of poor parental relationship that had a minimal reduction in odds ratios in all three waves, there was no clear pattern of change for any of the risk factors. There was a minimal but statistically significant change (0.2% - 2.4%) in the odds ratios for almost all the risk factors. There was a reduction in some (see Table 15), an increase in some (see Table 16); while a couple of them stayed the same in all the three waves of data collection.

Specifically, there was a reduction in poor parental relationship, suicidal behavior of friends and family, alcohol use, and drug use in Wave I; poor parental relationship, depressive symptoms, aggressive behavior, alcohol use, and drug use in Wave II; and poor parental relationship, depressive symptoms, and low self-esteem in Wave III. The greatest positive impact of religiosity on suicidal ideation was on aggressive behavior in Wave II (35% reduction in risk) and drug use in Wave I (14% reduction in risk).

The risk factors that showed minimal but significant increase after the addition of religiosity were: aggressive behavior, low self-esteem, and depressive symptoms in Wave I; aggressive behavior, low self-esteem, and suicidal behavior of friends and family in Wave II; and alcohol use, and suicidal behavior of friends and family in Wave III.

There was no change in the odds ratio for aggressive behavior in Wave III after the addition of religiosity in the model. Furthermore, drug use in Wave III did not meet significance level for entry into the model and was excluded.

Table 12 (Model 3 Step 1)

Multiple Logistic Regression Analyses of the Relationship Among Covariates and Suicidal Ideation in Waves I, II, and III

Variables	**Wave I N= 20,728**			**Wave II N=14,737**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Demographic Characteristics									
Age	0.991	0.963, 1.019	n/s	0.936	0.900, 0.973	< .01	0.893	0.840, 0.948	< .01
Gender (Female)	1.354	1.229, 1.491	< .01	1.267	1.116, 1.439	< .01	0.865	0.698, 1.071	n/s
Black	0.822	0.725, 0.933	< .01	0.684	0.567, 0.824	< .01	0.738	0.551, 0.990	< .05
Other	0.987	0.891, 1.093	n/s	0.875	0.754, 1.016	n/s	0.830	0.654, 1.055	n/s
Social Environment									
Parental relationship	2.549	1.978, 3.286	< .01	2.319	1.681, 3.200	< .01	2.164	1.447, 3.237	< .01
Suicidal behavior of friends and family	2.567	2.332, 2.826	< .01	3.218	2.830, 3.659	< .01	2.708	2.100, 3.493	< .01
Emotional Characteristics									
Depressive symptoms	3.055	2.777, 3.360	< .01	3.016	2.659, 3.421	< .01	2.298	1.793, 2.963	< .01
Low self-esteem	2.235	2.033, 2.457	< .01	2.300	2.029, 2.608	< .01	3.254	2.630, 4.026	< .01

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

Table 12 (Model 3 Step 1 Continued)

Multiple Logistic Regression Analyses of the Relationship Among Covariates and Suicidal Ideation in Waves I, II, and III

Variables	**Wave I N= 20,728**			**Wave II N=14,737**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Self-initiated aggressive behavior	2.041	1.810, 2.302	< .01	1.827	1.539, 2.168	< .01	1.179	0.733, 1.895	< .01
Drug use	1.767	1.591, 1.962	< .01	1.744	1.523, 1.996	< .01	2.093	1.666, 2.631	< .01
Alcohol use	1.424	1.278, 1.586	< .01	1.291	1.130, 1.475	< .01	1.381	1.020, 1.869	< .05

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

+ No (additional) effects met the 0.05 significance level for entry into the model

Table 13 (Model 3 Step 2)

Multiple Logistic Regression Analyses of the Relationship Among Religiosity, Covariates, and Suicidal Ideation in Waves I, II, and III

Variables	**Wave I N= 20,278**			**Wave II N=14,737**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Demographic Characteristics									
Age	0.989	0.962, 1.018	n/s	0.935	0.899, 0.971	< .01	0.892	0.839, 0.949	< .01
Gender (Female)	1.356	1.231, 1.495	< .01	1.276	1.124, 1.450	< .01	+		
Black	0.829	0.730, 0.942	< .01	0.684	0.567, 0.824	< .01	+		
Other	0.993	0.896, 1.101	n/s	0.875	0.754, 1.016	n/s	+		
Religious affiliation	0.846	0.744, 0.961	.01	0.722	0.615, 0.847	< .01	+		
Social Environment									
Parental relationship	2.537	1.965, 3.275	< .01	2.281	1.652, 3.150	< .01	2.156	1.435, 3.240	< .01
Suicidal behavior of friends and family	2.541	2.306, 2.800	< .01	3.230	2.840, 3.673	< .01	2.751	1.130, 3.553	< .01

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

+ No (additional) effects met the 0.05 significance level for entry into the model.

Table 13 (Model 3 Step 2 continued)

Multiple Logistic Regression Analyses of the Relationship Among Religiosity, Covariates, and Suicidal Ideation in Waves I, II, and III

Variables	**Wave I N= 20,278**			**Wave II N=14,737**			**Wave III N=15,197**		
	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Emotional Characteristics									
Depressive symptoms	3.061	2.780, 3.369	< .01	3.011	2.654, 3.416	< .01	2.244	1.739, 2.895	< .01
Low self-esteem	2.261	2.055, 2.487	< .01	2.304	2.032, 2.612	< .01	3.180	2.563, 3.944	< .01
Self-initiated aggressive behavior	2.064	1.829, 2.330	< .01	1.187	1.531, 2.157	< .01	+		
Drug use	1.517	1.369, 1.680	< .01	1.708	1.491, 1.957	< .01	2.093	1.662, 2.635	< .01
Alcohol use	1.419	1.273, 1.583	< .01	1.292	1.131, 1.477	< .01	1.393	1.025, 1.892	< .05

OR: odds ratio; CI: confidence interval; P: p-value; n/s: not significant

+ No (additional) effects met the 0.05 significance level for entry into the model.

Table 14

Pattern of Change in Suicidal Ideation Risk Among the Risk Factors After Religiosity Was added to the Model in Waves I, II, and III

Risk factor	**Wave I**	**Wave II**	**Wave III**
Poor parental relationship	Reduction (0.5%)	Reduction (1.6%)	Reduction (0.4%)
Suicidal behavior of friends and family	Reduction (1.0%)	Increase (0.4%)	Increase (1.6%)
Depressive symptoms	Increase (0.2%)	Reduction (0.2%)	Reduction (2.4%)
Low self-esteem	Increase (1.2%)	Increase (0.2%)	Reduction (2.3%)
Aggressive behavior	Increase (1.1%)	Reduction (35%)	+
Drug use	Reduction (14.2%)	Reduction (2.1%)	*
Alcohol use	Reduction (0.4%)	Reduction (0.1%)	Increase (0.9%)

Reduction: reduction in suicidal ideation risk

Increase: increase in suicidal ideation risk

+ No (additional) effects met the 0.05 significance level for entry into the model.

* No difference in odds ratio between Step 1 and Step 2

Table 15

*Risk Factors that had **Increased** Odds of Suicidal Ideation After Religiosity Was Added to the Model in Waves I, II, and III*

Wave I	**Wave II**	**Wave III**
Aggressive behavior	Low self-esteem	Suicidal behavior of others
Low self-esteem	Suicidal behavior of friends	Alcohol use
Depressive symptoms	and family	

Table 16

*Risk Factors that had **Reduced** Odds of Suicidal Ideation After Religiosity Was Added to the Model in Waves I, II, and III*

Wave I	**Wave II**	**Wave III**
Poor parental relationship	Poor parental relationship	Poor parental relationship
Suicidal behavior of friends and family	Depressive symptoms	Depressive symptoms
Alcohol use	Aggressive behavior*	Low self-esteem
Drug use*	Alcohol use	
	Drug use	

* Substantial reduction (14-35%) in odds observed

CHAPTER 5

DISCUSSION

A substantial amount of research has been dedicated to the study of suicide-related behaviors, but the relationship between suicidal ideation of adolescents and young adults and religiosity has not been extensively explored. The role of religiosity on suicidal ideation and other suicide risk factors was examined.

In this section the findings of the analyses are discussed. First, the results of the univariate analysis for the demographic, the dependent, and independent variables; second, the findings of the bivariate analyses in terms of the associations of the variables with suicidal ideation; third, the multivariate analyses in terms of the influence of religiosity on the relationship of risk factors to suicidal ideation. Next, strengths and limitations of the study, and finally, implications for public health practice, research, and education are discussed.

Univariate Analysis

Some of the demographic characteristics of the study population are similar to the US population at the time of data collection. Particularly, this study had 50.5% females in Wave I, 51.3% females in Wave II, and 52.8% females in Wave III; similar to the US population distribution around the time of data collection. According to the US Census Bureau, females made up 51.3% of the U.S. population in 1995 (US Census Bureau, 1995) and 50.9% in 2000 (US Census Bureau, 2012). Rhodes, Roffman, Reddy, and Fredriksen, (2004) in their study of middle school students also found 52.7% of the study participants to be female. However, the proportions of race observed were not consistent with the US population within the same period. The US population in 1995 consisted of 80.3% white and 12.1% black; and 75.1% white and 12.3% black in 2000 (US Census Bureau, 1995 and 2012). In this study, however, Whites were a

little over 50% and African Americans were about 21%. This could be explained by the fact that four ethnic groups, including African Americans, were purposefully oversampled in the Add Health survey (Harris, 2013).

All five of the religiosity measures had prevalence that is compatible with previous surveys. The prevalence of religious affiliation among this study group was between 81% and 88%, similar to the prevalence recorded in previous surveys. For example, the 2008 Pew Research Center reported about 83% for percentage of Americans who are religiously affiliated (Pew Research Center, 2008). Prevalence recorded for religious service attendance at least once a month in this study was 73%-87%. This is also similar to other surveys. A Monitoring the Future survey done by Smith and colleagues (2002) found that 85% of youth surveyed reported attending religious services at least sometimes. Youth religious program attendance had a prevalence of 26%-55% for this study; and similar to the Monitoring the Future survey (Smith et al., 2002) which was 39% for Wave 1 participants (aged 13-17 years) and 25% for Wave 2 participants (ages 16-21 years). Prevalence of importance of religion for this study population was 85% - 89% and similar to the yearly Gallup polls from 1992 to 2011 that repeatedly showed that over 80% of Americans considered religion as either fairly important or very important in their lives (Gallup, 1992-2011). However, in the US Religious Landscape Survey done by Pew Forum on Religion and Public Life, only 45% of participants 18-29 years responded religion was very important to them (Pew Research Center, 2010); which is about the same for this study because the current study captured participants who reported that religion was fairly important as well as those who reported religion was very important to them. Hence, the higher prevalence recorded for this study. Prevalence recorded for frequency of prayer at least once a month for

this study was 78% -92%, similar to the Monitoring the Future survey (Smith et al., 2002), that reported 86% for Wave 1 participants and 83% for Wave 2 participants.

One important observation is that the lower end of the prevalence recorded for all five religiosity measures were from the oldest participants (Wave III); in fact, prevalence decreased gradually as participants got older. This trend mirrors that found in other research that has documented religious participation and involvement decreases as adolescents become young adults. It is possible that the declining trend of religious participation among young adults is related to personal and familial issues (e.g. disillusionment, death of a loved one, parents' divorce, etc.) such that many young adults decide to leave the religion they were brought up in without becoming involved with a new faith and thus become religiously unaffiliated for most of their young adulthood (Pew Research Center, 2010). The declining trend is also attributed to age-related programs offered by religious congregations (Smith et al., 2002). For example, youth religious programs are often directed at school-age adolescents within a religious congregation; with very limited opportunities for getting involved beyond regular service attendance after adolescents graduate from high school (Smith et al., 2002). Less religious involvement of young adults could also be explained by other pressures of life that get the attention of young adults and change their priorities (Smith et al., 2002) and relegate observance of religious practices to the background. Lastly, some adolescents mimic the religious devotion of their parents. They tend to share beliefs similar to their parents, adopt the same religious tradition, and attend religious services with at a similar rate as their parents (Smith & Denton, 2005) so it is quite logical that when they become young adults, their religious involvement may decline as they try to cut out a niche for themselves and follow their own paths.

The results for suicide-related behaviors are consistent with some previous surveys and somewhat inconsistent with others. In this study, suicidal ideation among all participants was 11% -13%, with the highest prevalence being reported among younger participants (13.4%). Essentially, as participants became older prevalence of suicidal ideation decreased gradually. This is similar to a 2011 survey of nationally representative sample of youth in grades 9-12 that showed 15.8% of students reported they had seriously considered attempting suicide during the 12 months preceding the survey (CDC, 2012). A survey of 454 students by Walker and Bishop (2009) found suicidal ideation prevalence of 35%. Meanwhile, Youth Risk Behavior Survey (YRBS, 2014) data on suicidal ideation reported 19% -24% for suicidal ideation. The wide variations in the prevalence of suicidal ideation especially among Add Health participants and participants in the Walker study could be explained by how suicidal ideation was measured. The current study (Add Health) asked one question to measure suicidal ideation: "during the past 12 months did you ever seriously think about committing suicide?" The Walker study on the other hand used the Beck Suicide Scale (Beck, Kovacs, & Weissman, 1979) that had 19 questions including wish to live, wish to die, passive suicidal desire, attitude toward ideation, and control for suicidal action. A positive response to any of the 19 questions meant positive for suicidal ideation. So it is quite possible that the Walker study captured more suicide ideation participants that the Add Health study could not capture because of the nature of question and response options.

The prevalence of poor parental relationship was generally low among participants. However, a good number of participants also reported poor parental relationship especially among father figures. Although most participants perceived their fathers to be caring (89% - 95%), the percentage of participants who did not feel close to their fathers was 20% -27%

compared to lack of mother closeness which was 11% -14%. Other studies have found similar differences in the mother-child and father-child relationships in both middle childhood and adolescence where the prevalence of good parental relationships favors mothers (Collins, 1999).

The proportion of study participants who reported feeling depressed in the week prior to the interview was higher among younger participants than among older participants. In Wave I when the average age was 15, depressive symptoms were present in about 60% of participants but in Wave III, among young adults, it was about 27%. The prevalence among young adult participants is comparable to the 2011 National College Health Assessment by the American College Health Association among college students at 2- and 4-year institutions that found that about 30% of college students reported feeling "so depressed that it was difficult to function" at some time in the past year (American College Health Association, 2012). A study by Pratt and Brody (2008) however, had different results for adolescent depression. In that study, the prevalence of depression among persons 12-17, was 4.3% and for persons 18-39, it was 4.7%. Also, according to the National Comorbidity Survey, about 11% of adolescents have a depressive disorder by age 18 (NIMH, 2014). These are quite different from the results of the current study. This disparity could be credited to differences in questionnaires. The current study used one question to measure depression “you felt depressed in the past week” with these response items “never or rarely”, “sometimes”, “a lot of the time”, and “most or all of the time”. Anyone who responded positively was considered depressed. In the Pratt study, however, depression was measured in the National Health and Nutrition Examination Surveys (NHANES) using the Patient Health Questionnaire (PHQ-9), a nine-item screening instrument that asks questions about the frequency of symptoms of depression over the past 2 weeks. Response categories were: "not at all," "several days," "more than half the days", and "nearly every day"

and were given a score ranging from 0 to 3. A total score ranging from 0 to 27 was calculated, and depression was defined as a PHQ-9 score of 10 or higher (Pratt & Brody, 2008). So the Pratt and Brody study had more stringent requirement for the depression classification and, therefore, may have captured less participants compared to this study.

The prevalence of low self-esteem for this study was between 18% and 23% among participants, with the highest prevalence being recorded among younger participants; in fact the prevalence decreased gradually as participants got older in Waves II and III. This is consistent with a study among a sample of 6,522 US adolescents, aged 12-16 years that recorded a low self-esteem prevalence of 15% -25% (McClure, Tanski, Kingsbury, Gerrard, & Sargent, 2010) among participants. One possible reason for the high prevalence of low self-esteem, particularly among the younger adolescents, is that adolescence is a very difficult time for most young people who are often dealing with physical and usually dramatic changes (Kearney-Cooke, 1999; Kipke, 1999; Steinberg, 2004). The changes can result in negative views of self that in turn create a risk factor for other emotional difficulties (Rhodes et al., 2004) including low self-esteem.

Suicidal behavior among friends (18%, 14%, and 7% in Waves I, II, and III respectively) was generally higher than among family (5%, 4%, and 3% in Waves I, II, and III respectively). The prevalence of attempted suicide among friends and family in the year preceding the survey decreased steadily as adolescents became young adults. However, the trend was opposite for suicide deaths among friends and family. As adolescents moved from Wave I to Wave II to Wave III, prevalence of suicidal deaths of friends and family increased. The most comparable data available was from a study by Runeson and Asberg (2003) that examined suicide death rate of families among suicide decedents. Subjects were identified by death register (N=8,396). Researchers found that among families of the suicide decedents, there were 287 suicides,

representing 9.4% of all deaths in family members. Of interest is the fact that Dervic and colleagues (2004) found a prevalence of 2.3% of suicide by first-degree relatives among adult study subjects; which is similar to the prevalence for family suicide found in the current study.

Aggressive behavior was measured by weapon access, weapon use, and history of robbery. Weapon access, which was "carrying a weapon (such as gun, knife, or club to school in the past 30 days", had a prevalence of about 5% across waves in this study but in the YRBS survey, "carried a weapon on school property on at least 1 day" was 6% -9% in the same period. Weapon use was about 4% in this study but 7% -8% in the YRBS study. There was a general decrease in the prevalence of aggressive behavior (burglary, weapon use, and weapon access) among participants as they progressed through the different waves in this study.

Alcohol use more than 2 or 3 times in the participant's life in this study group was 57% for younger adolescents, 47% for older adolescents, and 77% for young adult participants. For the adolescent in the national Youth Risk Behavior Survey (YRBS) around the same time periods, the prevalence for "ever had at least one drink of alcohol on at least 1 day" was 78% - 80%. The difference could be explained by the fact that the YRBS question asked about "one drink" while the Add Health question asked about "2-3 drinks" so those who had only one drink may not have been captured in the Add Health study.

For this study marijuana use "one or more times (during the 30 days before the survey)" it was 26% -28% for adolescents and 44% for young adults for marijuana use at least one time. In an YRBS survey that asked the same question, the prevalence was 42% - 47% in the same periods as this study group. For "ever used any form of cocaine one or more times (for example, powder, crack, or freebase, during their life)" the prevalence was 3% -10% in this study; somewhat similar to the YRBS study, which recorded between 7% and 10%.

It is worth mentioning that the highest prevalence for alcohol and drug use was among young adults in Wave III. That is, as adolescents became young adults, the prevalence of alcohol, marijuana and any form of cocaine use increased as reported in previous studies (Mulye et al., 2009; SAMHSA, 2006). One possible reason for this is access; because young adult participants (mean age=22 years) are now old enough to legally obtain their own alcohol and they probably have more means to do so. Another reason could be changes in the living arrangements of young adults. A study of post high school students has shown that not living with a spouse or partner or parents increases the chances of illicit drug use among this age group (Bachman, O'Malley, & Johnston, 1984). Of interest is the fact that alcohol trends tend to parallel the trends in illicit drug use (Johnston, O'Malley, Bachman, & Schulenberg, 2011).

Bivariate Analysis

As in previous literature (CDC, 2012; Evans, Hawton, Romdan, & Deeks, 2005; Vander Stoep et al., 2009), the results of the bivariate analysis showed that adolescent females were more likely (72%) to have suicidal ideation than males. This could be attributed to the fact that females have been shown in previous studies to be more likely to present with some known risk factors of suicidal behavior. For example, women are more likely than men to experience depression during their lifetime (NIMH, 2014; Quatman & Watson, 2001) probably due to biological and hormonal changes that occur during puberty (Hankin & Abramson, 2001); adolescent females tend to have lower self-esteem and more negative assessments of their physical characteristics (Kearney-Cooke, 1999; Kling et al., 1999), and adolescent females consistently experience sharper declines than boys in their levels of self-esteem (Carlson, Uppal, & Prosser, 2000; DuBois et al. as cited in Rhodes et al., 2004) . Finally, research has shown that girls are more likely than boys to continue feeling bad after experiencing difficult situations or

events, suggesting they are more prone to depression (Hankin & Abramson, 2001) and consequently suicidal ideation. Also, female adolescents tend to doubt themselves, doubt their problem-solving abilities, and view their problems as unsolvable more so than their male counterparts. Girls with these views are more likely to have depressive symptoms as well (Calvete & Cardenoso, 2005). Finally, girls are more likely to undergo more hardship, such as childhood sexual abuse, and other traumas than boys (Lin, Li, Fan, & Fang, 2011; Wunderlich, Bronisch, Wittchen, & Carter, 2001) that are associated with suicidal thoughts (Lin et al., 2011). One study found that more than 70% of depressed girls experienced a stressful life event prior to a depressive episode compared to 14% of boys (Cyranowski, Frank, Young, & Shear, 2000).

Finally, the female-male difference in suicidal ideation risk was no longer significant in Wave III when participants were young adults, and rightly so as some of the factors responsible for the higher risk in females are no longer present in young adulthood. For example, it has been established in some studies that self-esteem for females tends to increase during young adulthood (Galambos, Barker, & Krahn, 2006).

African Americans were consistently less likely to have suicidal ideation compared to Whites in all three waves of data collection, with the highest variance recorded in Wave III, 32%, when participants were now young adults. This can be attributed to the fact that African Americans are less likely to have some of the risk factors of suicide and are more likely to possess the protective factors of suicide-related behavior. For example, studies show that African Americans are less likely than Whites to experience depression (one of the strongest predictors of suicidal behavior). According to the National Institute of Mental Health, African Americans are 40% less likely to experience depression than non-Hispanic whites during their lifetime; (NIMH, 2014). There are also some characteristics within the African American culture that

have been shown to be protective of suicide-related behavior: strong religious orientation (Gearing & Lizardi, 2008; Hoffman & Marsiglia, 2012; Jarbin & von Knorring, 2004; Sisask et al., 2010; Stack, 2000); strong family bonds (Sharaf, Thompson, & Walsh, 2009; Tang et al. 2010; Walsh, Edelstein, & Vota, 2012); and having parents who are religiously involved (Caribé et al., 2012; Yur'yev et al., 2012). At the same time other studies have found less depression among African Americans who are active church members (Molock, Puri, Matlin, & Barksdale, 2006).

African Americans have a strong religious and spiritual orientation that can be traced back to Africa and the slavery era (Hines & Boyd-Franklin, 1996). Although a large proportion of the U.S. population is religious, African-Americans are distinctly more religious on a range of measures than the U.S. population as a whole. This includes their level of affiliation with a religion, attendance at religious services, frequency of prayer and religion's importance in life. Compared with other racial and ethnic groups, African-Americans are among the most likely to report a formal religious affiliation, with fully 87% of African-Americans describing themselves as belonging to one religious group or another (Pew Research Center, 2007).

Among African Americans, there are strong kinship bonds, also traceable to Africa where there is communal form of living and members of a community are one another's keeper; and then to the slavery years when they had to depend on one another for survival (Hines & Boyd-Franklin, 1996). Even in modern times the kinship network in the African American community still goes beyond traditional blood lines; everyone in a community is considered a relative. Hence, it is very common to find several blood related and nonblood related aunts, uncles, big mamas, older brothers and sisters, deacons, preachers, and others going in and out of an African American home (Hines & Boyd-Franklin ,1996).

With positive influence of religion and strong family ties on suicide and suicide-related behavior recorded in various studies, it is safe to assume that the higher religious involvement of African Americans and their strong family bonds have something to do with their lower odds of suicidal ideation. Incidentally, some research studies have found that the reason for the low depression and low suicidality among this group is as a result of strong family support and community connectedness (Matlin et al., 2011).

All five religiosity measures had positive associations with suicidal ideation in Wave I as found in some studies (Rasic, Kisely, & Langille, 2011). However, as participants got older some of the measures began to lose their statistical significance. Specifically, youth religious program attendance was not related to suicidal ideation in Wave II and frequency of prayer was not related to suicidal ideation in III. This is consistent with the results of this study's univariate analysis that found decreasing prevalence of religiosity among the older adolescents and young adult participants. The odds of 0.71 for suicidal ideation with religious affiliation is similar to the one (0.89) found by Dervic and colleagues (2004) in their study. The religiosity measures that were consistently significantly related to suicidal ideation across all three waves were religious affiliation and religious service attendance. Interestingly, the oldest participants had more benefit (in terms of suicidal ideation) from being religiously affiliated and attending religious services and youth programs than did the younger adolescent participants.

The lack of significance of some of the religiosity measures seen with the bivariate analysis among older participants could possibly be linked to declining religiosity (specifically youth program attendance and prayer) during later adolescence and young adulthood found in the univariate analysis. As alluded to in the discussion of the univariate results, the declining trend of the religiosity measures at the bivariate level is also attributable to lack of relevance of

youth programs to young adults and general decline in religious participation and involvement during young adulthood (Smith et al., 2002). As a result young adults may not be considerably different from the nonaffiliated participants, hence the lack of significance.

Also extrinsic religiosity (measured by religious service attendance and youth religious program attendance) and intrinsic religiosity (measured by frequency of prayer and perception of religion's importance) were both correlated with suicidal ideation in all three waves. However, extrinsic religiosity seems to have a greater effect on suicidal ideation of older participants (Wave III) than younger participants because the level of variance increased gradually in each subsequent wave. Intrinsic religiosity, on the other hand, seems to be a stronger predictor of less suicidal ideation among younger participants (Wave I) as the level of variance decreased steadily in subsequent waves. This is consistent with other studies that have found intrinsic religiosity to be predictive of lower suicidal behavior in younger populations (Nonnemaker et al., 2003; Rasic et al., 2011; Walker & Bishop, 2005).

One possible reason why young adults may benefit more from extrinsic religiosity than from intrinsic religiosity is that if they participate in those extrinsic religious activities (which we have established from this study declines during young adulthood), then they find it to be worthwhile. Hence, they may be putting all their energies into it and thereby gain whatever benefit comes with public religious participation. Also, adolescents who actually practice extrinsic religiosity may be doing so on their own accord instead of just mimicking the religious practices of adults in their lives, like attending religious services for example. It is likely that "praying privately" and "believing that religion is important or very important" are activities that are self-initiated and therefore may be more enduring and beneficial.

Poor parental relationship was highly correlated with suicidal ideation in all three waves as seen in other studies (Fotti, Katz, Afifi, & Cox, 2006; Hardt, Herke, & Schier, 2011; Rubestein, Halton, Kasten, Rubin, & Stechler, 1998; Sidhartha & Jena, 2006). For example, in the study by Hardt et al. (2011) researchers found poor parental relationships to be a strong predictor of suicidal ideation and attempts in a nationally representative sample of adolescents. Furthermore, this result is consistent with family systems theory's prediction that parent-child interaction determines a child's psychological well-being (Bowen as cited in Kwok & Shek, 2011). One possible reason for the strong correlation between poor parental relationship and suicidal ideation among adolescents and young adults is that children tend to clamor for their independence as they become adolescents and young adults. This may result in conflict with parents and subsequently create a suitable environment for suicide risk factors like stress and low self-esteem within the adolescent that may eventually lead to suicidal thoughts. In fact, Kuhlberg, Peña, and Zayas (2004) found that parent-adolescent conflict resulted in poor self-esteem and subsequently to suicide attempts among adolescent Latinas.

Depression was highly correlated with suicidal ideation in all three waves. This finding is similar to the ones found in other studies (Chabrol & Choquet, 2009; Fotti, Katz, Afifi, & Cox, 2006; Handley et al., 2012; Molock, Puri, Matlin, & Barksdale, 2006). For example, in the study by Fotti et al. (2006) researchers found depression to be highly associated with suicidal ideation. There is no question that depression is one of the strongest predictors of suicidal ideation and other suicide-related behavior. Depression is always accompanied by a persistent sense of suffering plus the belief that there is no escape. The pain of existence often becomes too much for the depressed person to bear. The state of depression distorts their thinking, allowing ideas

like "everyone would be better off without me" to be thought of as rational by the depressed person. (Lickerman, 2010).This, unfortunately, is the nature of depression

Suicidal behavior (suicide attempts and suicide deaths) of friends and family was highly correlated with suicidal ideation in all three waves. This result is similar to previous studies (Bearman & Moody, 2004; Shilubane et al., 2012; Sidhartha & Jena, 2006). Often people who lose a close friend or family member to suicide are filled with pain, guilt, anger, and regret. They struggle to make sense of why their friend or relative chose to attempt or die of suicide (Lickerman, 2010). The anguish they feel may lead some to question the worth of their existence. The high correlation of familial suicide-related behavior with suicidal ideation and other suicidal behavior could also be explained by genetics (Maris, Alan, & Morton, 2000; Zalsman, 2012).

Participants with low self-esteem were 3-5 times more likely to have suicidal ideation in all three waves of data collection; similar to the finding of Wichstrøm's (2000) study. Living in a success-orientated culture can affect the self-esteem of those who feel they do not measure up. Adolescents are, especially, barraged with high expectations in almost every aspect of their lives, so failure at school, for instance, may make them feel poorly of themselves. This can lead to delinquency, eating disorders, drugs, and suicide-related behaviors (Massey, 2013).

Self-initiated aggressive behavior was strongly correlated with suicidal ideation, 2-3 times. The finding corresponds with previous studies (Dervic et al., 2004; Mann, Waternaux, Haas, & Malone, 1999). Studies have linked aggressive impulses with levels of serotonin in the brain or serotonin metabolites – low levels of serotonin or its metabolites tend to be associated with violent behavior directed at oneself (suicidal behavior) or others (Plutchik, 2000). In other words, the mechanism that influences someone to be aggressive toward others is the same that drives him or her to have suicidal tendencies.

Alcohol or drug use was significantly related to suicidal ideation as has been found in previous studies (Huang, Yen, & Lung, 2010; Miller et al., 2011; Nordentoft, 2007; Walsh, Edelstein, & Vota, 2012). One possible reason for the positive correlation between alcohol use and suicidal ideation is that alcohol increases impulsivity and decreases inhibition. It also increases negative self-image and decreases self-esteem and exacerbates depression and social isolation. Alcohol use also promotes "either or" and "all or nothing" thinking and a minimal concern for the consequences of one's actions (Facts about Alcohol and Suicide n.d). Further, the positive link between substance use and suicidal ideation can be attributed to the fact that persons who are use substances often have a number of other risk factors for suicide. For example, they are more likely to be depressed and to have social and financial problems. Substance use and abuse are also common among persons prone to be impulsive and among persons who engage in many types of high risk behaviors that result in suicidal behavior (Does Alcohol and Other Drug Abuse Increase the Risk for Suicide? n.d.).

Multivariate Analysis: Hypotheses Testing

Hypothesis 1: Relationship Between Religious Affiliation and Suicidal Ideation

As hypothesized, adjusted multivariate analysis showed that participants who identify with a religious faith are less likely to have suicidal ideation than nonreligious participants. This finding is consistent with previous studies that found less suicide-related behaviors among religiously affiliated subjects (e.g. Dervic et al., 2004; Gearing & Lizardi, 2009, Stack, 2011). Not surprisingly, religious affiliation was found to be negatively correlated with suicidal ideation at the bivariate level.

Hypothesis 2: Intrinsic Religiosity and Suicidal Ideation Versus Extrinsic Religiosity and Suicidal Ideation

The hypothesis that participants who practiced intrinsic religiosity would have less suicidal ideation than participants who practiced extrinsic was fully supported in Wave II only. The result for extrinsic religiosity and suicidal ideation in Wave I was not significant; and that for intrinsic religiosity and suicidal ideation in Wave III was not significant. This means among the youngest participants in Wave I, intrinsic religiosity predicted less suicidal ideation, but extrinsic religiosity did not. On the other hand, among young adult participants in Wave III, extrinsic religiosity predicted less suicidal ideation but intrinsic religiosity did not.

To understand why extrinsic religiosity was not significant for younger participants (Wave I) but significant for older participants (Wave III) at the multivariate level, a check of the bivariate relationships of the extrinsic religiosity measures (religious service attendance and youth religious program attendance) individually was done and it was revealed that each is significant in both Wave I and Wave II. Additionally, the bivariate relationship of the combined extrinsic religiosity is significant for both Wave I and Wave II participants. However, the results of the bivariate analysis show that the variance of the relationship between intrinsic religiosity and suicidal behavior was lesser for older participants than for younger participants. This means that young adults benefited more from extrinsic religiosity than did adolescents. Thus the result of the multivariate analysis is naturally in line with the results of the bivariate analysis. This result is bolstered by a study by Nonnemaker, McNeely, and Blum (2003) that found only intrinsic religiosity was significantly associated with suicidal ideation among young adolescents.

In a related fashion, to understand why intrinsic religiosity was not significant for older participants in Wave III but significant for younger participants in Wave I, the bivariate

relationships of the intrinsic religiosity measures (frequency of prayer and importance of religion) were examined individually. The results show that at the bivariate level prayer did not play a significant role in the suicidal ideation of older participants. Also, at the bivariate level the level of variance for intrinsic religiosity decreased gradually as participants became older. Therefore, it is not surprising that in the adjusted models the intrinsic religiosity-suicidal ideation relationship was not significant in Wave III. One of the reasons why prayer may not be a significant predictor of suicidal ideation is that suicidal ideation may drive someone to pray more and thus give the appearance of prayer influencing suicidal ideation instead of the other way around.

Hypothesis 3: Role of Religiosity on the Relationships of Suicidal Ideation with Poor Parental Relationship, Depressive Symptoms, Low Self-Esteem, Suicidal Behavior of Family and Friends, Aggressive Behavior, and History of Drug and Alcohol Use

Results of the multiple regression analysis showed that all the selected risk factors were significantly related to suicidal ideation in the first model that did not include religiosity. As shown in Table 15, although the expected positive impact of religiosity on all the risk factors was not fully realized, some of the risk factors received a boost in their relationships with suicidal ideation after religiosity was added to the (i.e. poor parental relationship, suicidal behavior of friends and family, depressive symptoms, alcohol use, aggressive behavior, low self-esteem, drug use, and alcohol use) in different waves; although the reductions were mostly marginal (0.1% -2.4%). The biggest positive impact was on drug use in Wave I and aggressive behavior in Wave II. Another important finding was the positive impact religiosity made on the risk of suicidal ideation of participants with poor parental relationship.

Summary of Findings

Religious service attendance, youth program attendance, frequency of prayer, religion's importance and frequency of prayer all had high prevalence in Wave I but as participants moved through the waves, the prevalence decreased gradually. Likewise, all five religiosity measures had positive associations with suicidal ideation in Wave I. However, as participants got older some of the measures become nonsignificantly related to suicidal ideation. Specifically, youth religious program attendance was not related to suicidal ideation in Wave II, nor was frequency of prayer in Wave III. One reason for the declining trends in religiosity among young adults is that some of the religiosity measures lose their salience among this age group. Also, extrinsic religiosity and intrinsic religiosity were both correlated with suicidal ideation in all three waves, but extrinsic religiosity seemed to have a greater influence on suicidal ideation of older participants, while intrinsic religiosity was more beneficial for younger participants

Adolescent females were more likely to have suicidal ideation than males. Some of the reasons are female adolescents are more likely to present with some known risk factors of suicidal behavior like depression and low self-esteem. Also, girls are more likely to undergo more hardship such as childhood sexual abuse and other traumas that are associated with suicidal behaviors. Nonetheless, the female-male difference in suicidal ideation risk disappears during young adulthood because some of the factors (e.g. low self-esteem) responsible for the higher risk in females are no longer present in young adulthood.

African Americans were consistently less likely to have suicidal ideation compared to Whites in all three waves of data collection. This is attributed to the fact that African Americans are less likely to have some of the risk factors of suicide and are more likely to possess the

protective factors against suicide-related behavior – strong family bonds, high levels of religiosity, less depression.

All the selected risk factors (poor parental relationships, presence of depressive symptoms, low self-esteem, self-initiated aggressive behavior, alcohol use, drug use, suicidal attempts and death of friends and family) were positively associated with suicidal ideation at both the bivariate and multivariate levels, but the strongest predictors of suicidal ideation were depression, low self-esteem, suicidal behavior of others, and poor parental relationships (ORs 3 - 5). When religiosity was added to the model, all the risk factors were still significantly related to suicidal ideation, but the expected positive impact of religiosity on the risks were not fully realized. The biggest impact of religiosity was realized with drug use among younger adolescents and aggressive behavior among older adolescents.

Public Health Implications

This study has revealed that religiosity is related to suicidal ideation in adolescents and young adults. Furthermore, private religiosity appears to be the most protective type of religiosity for adolescents, and public religiosity appears more protective for young adults. Consequently, suicide prevention efforts that focus on prayer for adolescents and religious service attendance for young adults would be predicted to be most effective, if indeed these aspects of religion are causing the different proportion of suicidal ideation found in the current study.

The study also revealed that poor parental relationship is one of the strongest predictors of suicidal ideation. Therefore, the parent-child relationship needs to be strengthened at every stage of life. Adolescents as well as young adults could benefit from closer and warmer relationships with the parental figures in their lives. Parents, particularly fathers, should be more

involved in the lives of their children as the results of this study shows an increasing lack of paternal connection as participants get older. Community outreach programs that emphasize the need for parents and other adults to continue to have warm, healthy, and respectful relationships with their children even when they are on their own is needed.

Furthermore, poor parental relationship was the only risk factor that consistently had a decreased odds ratio with the introduction of religiosity in the final model. Therefore, in the absence of good parental relationship, the religious community can step in and offer a buffer to make a difference.

In addition to poor parental relationships, depression, low self-esteem, suicide attempts and suicide death of friends and family strongly predicted suicidal ideation. Programs that aim at increasing self-esteem (especially among female adolescents) and reducing depressive symptoms may be beneficial. Also there should be a mechanism in place to act swiftly to intervene when there is a suicide attempt or death in the community. This may go a long way to avert the repercussions of the suicidal action especially among close friends and family members.

Strengths and Limitations

This study provides some valuable information on the relationship between religiosity and suicidal ideation among a large representative sample of American adolescents emerging into adulthood. However, the findings should be viewed in light of these limitations:

Data were collected through self-reports and, therefore, the validity may be suspect. However, the interviews were conducted through ACASI technology on laptop computers. Participants listened through earphones to prerecorded questions and recorded the answers directly on the laptop computers (Harris, 2011). This method eliminated some of the biases associated with self-reports. Some studies that have compared regular face-to-face interviews

and interviews with ACASI technology have found the ACASI method to be more accurate (e.g. Newman et al., 2002)

Although participants' religiosity was assessed with five individual religiosity measures, at the bivariate and multivariate levels, only religious affiliation was used to assess participants' suicidal ideation risk. Yet using religious affiliation only as a measure of religiosity is reported in the literature to be inadequate.

"For some people, religious affiliation is purely nominal or used as an identifier to distinguish themselves from members of other religious groups… religious affiliation is more like ethnicity, something that for most is part of their family, community or cultural heritage, rather than being chosen by them…" (McAndrew & Voas, 2011 p. 2).

To have a complete picture of religiosity of subjects in a survey it is recommended to use the Multidimensional Measure of Religiousness that includes questions about daily spiritual experiences, meaning, values, beliefs, forgiveness, private religious practices, religious or spiritual coping, religious support, religious or spiritual history, commitment, organizational religiousness, and religious preference as contained in the Fetzer Institute report (2003), or at the least, the Brief Multidimensional Measure of Religiousness/Spirituality that contains all the domains listed in the Multidimensional Scale but with fewer questions in each domain. However, the authors concede that collecting abundant data on religiosity is not feasible for many health researchers.

Another limitation is the broad categorization of the religiosity measures. Each measure had just two main categories: religious versus nonreligious on each of the religiosity measures. For example, religious service attendance was categorized as ever attended religious service and never attended. Therefore, those who attended more frequently (once a week or more) were not

differentiated from those who attended less frequently (less than once a month). Still, this did not take away from the overall salutary effect of religiosity on suicidal ideation as was shown in the analyses, especially at the bivariate and multivariate levels. Moreover, other studies have found positive associations of religiosity measures with suicidal ideation even with this type of categorization. For example, Rasic et al. (2011) found in their study that subjects who attended religious services at least once per year had decreased odds of subsequent suicide attempts compared with those who did not attend religious services.

The final limitation is the use of one question to measure depression of participants. Ideally, the full Center for Epidemiology (Studies CES-D) Scale, a short self-report scale with about 20 questions used to gauge depressive symptoms of participants should have been used. That may have given a better assessment of the depressive state of participants. However, the relationship of suicidal ideation with the single question on depression was unambiguous, so the scale may not have adversely affected the results.

Future Research Directions

So far, although more longitudinal studies are coming up, almost all research on religion and suicide is cross-sectional. The goal is to use clinical trials to examine the effect of religious interventions on reducing suicidal ideation. However, in the absence of these clinical trials, we can focus on religious beliefs that may be protective of suicide; more so because suicide mortality rates are high among youth. Suicide death is a culmination of processes that implies a progression of suicidality ranging from suicidal ideation, suicide plans, suicide attempt and finally suicide death (Schrijvers, Bollen, & Sabbe, 2012). Hence, the importance of addressing the initial part of the problem to avoid escalation into a full-blown suicide death cannot be overemphasized.

This study showed that private religious participation (frequency of prayer, importance of religion) is more beneficial for younger adolescents while public religious participation (frequency of religious service attendance or youth program attendance) is more beneficial to young adults. So, future research can examine what in these forms of religious practices makes one more advantageous for one group and not the other and vice versa. In the same vein, it would be good to look at differences in the level of religiosity with suicidal ideation. Certainly, those who attend religious services once in a long while may not have the same characteristics as the ones who attend several times a week.

This research analyzed all religions as a whole, but there are unquestionable differences in beliefs and practices among the different religions (and even denominations within the same religion), and it would be worthwhile to look at how the beliefs and practices of the individual religions impact suicidal ideation of youth.

In this study all the risk factors had statistically significant relationships with very clear odds ratios. Even so, it would be good for future research to differentiate between those who occasionally exhibit the risk factors and those who do so frequently.

The results of this study revealed that African Americans are less likely to have suicidal ideation. In the future more in-depth exploratory studies can be done among this group to ascertain the reasons that make them less prone to suicidal ideation to inform suicide intervention programs.

Conclusion

This study showed a relationship between religious affiliation (and other measures of religiosity) and suicidal ideation in a nationally representative sample of adolescents emerging into adulthood. Although the hypothesis that religiosity would reduce the effect of the selected

risk factors was not fully realized in this study, the overall direct impact of religiosity on suicidal ideation was positive. Given the insufficient attention given to adolescent religious beliefs in suicide prevention programs and strategies, support for the adolescent's own religious affiliation could be an additional resource in suicide prevention directed at youth suicide prevention.

It seems that a religious affiliation, participation, and beliefs and a higher threshold for depression and low self-esteem reduces suicidal ideation among adolescents and young adults. Religiosity was also very impactful among those who use drugs and those who exhibit aggressive tendencies.

Available data show that suicidal ideation and attempts have been increasing in recent years (CDC, 2014), so more efforts including the ones suggested in this study need to be directed at prevention as these behaviors are directly linked to suicide deaths.

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APPENDIX

Full List of Variables Used Including Questionnaires and Coding

Wave I, Wave II, and Wave III

Wave I

(20,728) adolescents 11-19 years in (7^{th}-12^{th} Grades) interviewed at home (April 1995-December 1995)

Variable	**Question**
Age	What is your birth date? [month and year]
Biological Sex	Interviewer, please confirm that R's sex is (male) female. (Ask if necessary.) **(1) R=male (2)R= female**
Race	Are you of Hispanic or Latino origin? 0 no 1 yes What is your race? You may give more than one answer. o White o Black or African American o American Indian or Native American o Asian or Pacific Islander o Other {1=White} {2= Black or African American } {3=Hispanic, American Indian or Native American, Asian or Pacific Islander, Other}
Suicidal Ideation	During the past 12 months, did you ever seriously think about committing suicide? 0 no 1 yes **{0=0} {1= 1}**
Suicidal Attempts	During the past 12 months, how many times did you actually attempt suicide? 0 0 times 1 1 time 2 2 or 3 times 3 4 or 5 times 4 6 or more times **{0=0} {1, 2, 3,4=1}**

Friends' Suicide Attempt	Have any of your friends tried to kill themselves during the past 12 months? 0 no 1 yes **{0=0} {1= 1}**
Friends' Suicide	Have any of them succeeded? 0 no 1 yes **{0=0} {1= 1}**
Family Suicide Attempts	Have any of your family tried to kill themselves during the past 12 months? 0 no 1 yes **{0=0} {1= 1}**
Family Suicide	Have any of them succeeded? 0 no 1 yes **{0=0} {1= 1}**
Religious Affiliation	What is your religion? 0 none 1 Adventist* 2 AME, AME Zion, CME* 3 Assemblies of God* 4 Baptist* 5 Christian Church (Disciples of Christ)* 6 Christian Science 7 Congregational* 8 Episcopal* 9 Friends/Quaker 10 Holiness* 11 Jehovah's Witness* 12 Latter Day Saints (Mormon)* 13 Lutheran* 14 Methodist* 15 National Baptist* 16 Pentecostal* 17 Presbyterian* 18 United Church of Christ* 19 other Protestant* 20 Baha'i

	21 Buddhist 22 Catholic 23 Eastern Orthodox 24 Hindu 25 Islam, Moslem, Muslim 26 Jewish—Conservative, Reformed, Orthodox, or Reconstructionist 27 Unitarian 28 other religion **{None (0)=0} {1-28 =1}**
Religious Service Attendance	In the past 12 months, how often did you attend religious services? 1 once a week or more 2 once a month or more, but less than once a week 3 less than once a month 4 never **{4=0} {2, 3 =1} {1=2}**
Youth religious program attendance	Many churches, synagogues, and other places of worship have special activities for teenagers—such as youth groups, Bible classes, or choir. In the past 12 months, how often did you attend such youth activities? 1 once a week or more 2 once a month or more, but less than once a week 3 less than once a month 4 never **{4=0} {2, 3 =1} {1=2}**
Intrinsic Religiosity	How important is religion to you? 1 very important 2 fairly important 3 fairly unimportant 4 not important at all **{1,2,=1} {3,4 =0}**
Frequency of prayer	How often do you pray? 1 at least once a day 2 at least once a week 3 at least once a month 4 less than once a month 5 never **{5=0} {3, 4 =1} {1, 2 = 2}**
Intrinsic Religiosity	~ Frequency of prayer ~ Importance of religion Yes ever prays or yes religion is fairly important or very important= 1

	Never prays or religion is fairly unimportant or not important at all = 0
Extrinsic Religiosity	~ Religious service attendance ~ Youth program attendance Yes ever attended religious service or yes ever attended youth programs = 1 Never attended religious service or never attended youth programs = 0
Overall religiosity	~ Religious service attendance ~ Prayer Yes ever attended religious service or yes prays = 1 No never attended religious service or no never prays = 0
Self-esteem	You like yourself just the way you are. 1 strongly agree 2 agree 3 neither agree nor disagree 4 disagree 5 strongly disagree **{1,2,=0} {3,4,5=1}** (reverse coded to account for low self-esteem versus suicide)
Depressive symptoms	How often was each of the following things true during the past week? You felt depressed. 0 never or rarely 1 sometimes 2 a lot of the time 3 most of the time or all of the time **{0=0} {1, 2, 3 =1}**
Aggressive Tendencies (robbery)	In the past 12 months, how often did you go into a house or building to steal something? 0 never 1 1 or 2 times 2 3 or 4 times 3 5 or more times **{0=0} {1,2, 3=1}**
Aggressive Tendencies (Weapon threat)	In the past 12 months, how often did you use or threaten to use a weapon to get something from someone? 0 never 1 1 or 2 times 2 3 or 4 times 3 5 or more times **{0=0} {1, 2, 3 =1}**
Aggressive	During the past 30 days, on how many days did you carry a weapon—

Tendencies (Weapon access)	such as a gun, knife, or club—to school? 0 none 1 1 day 2 2 or 3 days 3 4 or 5 days 4 6 or more days **{0=0} {1,2, 3, 4=1}**
Alcohol	Have you had a drink of beer, wine, or liquor—not just a sip or a taste of someone else's drink—more than 2 or 3 times in your life? 0 no 1 yes **{0=0} {1= 1}**
Marijuana	How old were you when you tried marijuana for the first time? If you never tried marijuana, enter "0." 0 You never tried marijuana. 1 one year 2 two years 3 three years 4 four years 5 five years 6 six years 7 seven years 8 eight years 9 nine years 10 ten years 11 eleven years 12 twelve years 13 thirteen years 14 fourteen years 15 fifteen years 16 sixteen years 17 seventeen years 18 eighteen years and older **{0=0} {1-18=1}**
Cocaine	How old were you when you tried any kind of cocaine— including powder, freebase, or crack cocaine—for the first time? If you never tried cocaine, enter "0." 0 You never tried cocaine. 1 one year 2 two years

	3 three years 4 four years 5 five years 6 six years 7 seven years 8 eight years 9 nine years 10 ten years 11 eleven years 12 twelve years 13 thirteen years 14 fourteen years 15 fifteen years 16 sixteen years 17 seventeen years 18 eighteen years and older **{0=0} {1-18=1}**
Parental Support	~ How close do you feel to your {mother/adoptive mother/stepmother/foster mother/etc.}? ~ How much do you think she cares about you? ~ How close do you feel to your {father/adoptive father/father/stepfather/foster father/etc.? ~ How much do you think he cares about you? 1 not at all 2 very little 3 somewhat 4 quite a bit 5 very much **{3,4,5=0} {1,2=1}**

Wave II

(14737) adolescents aged 12-20 in (8^{th}-12^{th} Grades) interviewed at home (April 1996-August 1996)

Variable	**Question**
Age	What is your birth date? [month and year]
Biological Sex	Interviewer, please confirm that R's sex is (male) female. (Ask if necessary.) **(1) R=male (2)R= female**
Race	Race questions were not asked at Wave II since these data had been collected at Wave I so I used coding suggested by Add Health "Merge Wave I and II data files using the AID variable to obtain the race variables for Wave II"
Suicidal Ideation	During the past 12 months, did you ever seriously think about committing suicide? 0 no 1 yes **{0=0} {1= 1}**
Suicidal Attempts	During the past 12 months, how many times did you actually attempt suicide? 0 0 times 1 1 time 2 2 or 3 times 3 4 or 5 times 4 6 or more times **{0=0} {1, 2, 3,4=1}**
Friends' Suicide Attempt	Have any of your friends tried to kill themselves during the past 12 months? 0 no 1 yes **{0=0} {1= 1}**
Friends Suicide	Have any of them succeeded? 0 no 1 yes **{0=0} {1= 1}**
Family Suicide Attempts	Have any of your family tried to kill themselves during the past 12 months?

	0 no 1 yes **{0=0} {1= 1}**
Suicide of Family	Have any of them succeeded? 0 no 1 yes **{0=0} {1= 1}**
Religious Affiliation	What is your religion? 1 Adventist* 2 AME, AME Zion, CME* 3 Assemblies of God* 4 Baptist* 5 Christian Church (Disciples of Christ)* 6 Christian Science 7 Congregational* 8 Episcopal* 9 Friends/Quaker 10 Holiness* 11 Jehovah's Witness* 12 Latter Day Saints (Mormon)* 13 Lutheran* 14 Methodist* 15 National Baptist* 16 Pentecostal* 17 Presbyterian* 18 United Church of Christ* 19 other Protestant* 20 Baha'i 21 Buddhist 22 Catholic 23 Eastern Orthodox 24 Hindu 25 Islam, Moslem, Muslim 26 Jewish—Conservative, Reformed, Orthodox, or Reconstructionist 27 Unitarian 28 other religion 29 none **{1-28 =1} {29=0}**
Religious service attendance	In the past 12 months, how often did you attend religious services? 1 once a week or more

	2 once a month or more, but less than once a week 3 less than once a month 4 never **{4=0} {2, 3 =1} {1=1}**
Youth religious program attendance	Many churches, synagogues, and other places of worship have special activities for teenagers—such as youth groups, Bible classes, or choir. In the past 12 months, how often did you attend such youth activities? 1 once a week or more 2 once a month or more, but less than once a week 3 less than once a month 4 never **{4=0} {2, 3 =1} {1=1}**
Importance of religion	How important is religion to you? 1 very important 2 fairly important 3 fairly unimportant 4 not important at all **{3,4 =0} {1,2,=1}**
Frequency of prayer	How often do you pray? 1 at least once a day 2 at least once a week 3 at least once a month 4 less than once a month 5 never **{5=0} {3, 4 =1} {1, 2 = 2}**
Intrinsic Religiosity	Frequency of prayer Importance of religion Yes ever prays or yes religion is important = 1 No never prays or no religion is not important = 0
Extrinsic Religiosity	Religious service attendance Youth program attendance Yes ever attended religious service or yes attended youth programs = 1 No never attended religious service or no never attended youth programs = 0
Overall religiosity	Religious service attendance Prayer Yes ever attended religious service or yes ever prays = 1 No never attended religious service or no never prays = 0
Self-esteem	You like yourself just the way you are. 1 strongly agree

	2 agree 3 neither agree nor disagree 4 disagree 5 strongly disagree **{1,2,=0} {3,4,5=1}** reverse coded to account for low self-esteem against suicide
Depressive symptoms	How often was each of the following things true during the past week? You felt depressed. 0 never or rarely 1 sometimes 2 a lot of the time 3 most of the time or all of the time **{0=0} {1, 2, 3 =1}**
Aggressive Tendencies (robbery)	In the past 12 months, how often did you go into a house or building to steal something? 0 never 1 1 or 2 times 2 3 or 4 times 3 5 or more times **{0=0} {1, 2, 3 =1}**
Aggressive Tendencies (Weapon threat)	In the past 12 months, how often did you use or threaten to use a weapon to get something from someone? 0 never 1 1 or 2 times 2 3 or 4 times 3 5 or more times **{0=0} {1, 2, 3 =1}**
Aggressive Tendencies (Weapon access)	During the past 30 days, on how many days did you carry a weapon—such as a gun, knife, or club—to school? 0 none 1 1 day 2 2 or 3 days 3 4 or 5 days 4 6 or more days **{0=0} {1,2, 3,4=1}**
Alcohol	Since {MOLI}, have you had a drink of beer, wine, or liquor—not just a sip or a taste of someone else's drink—more than two or three times? 0 no 1 yes **{0=0} {1= 1}**

	Note: MOLI is an abbreviation used to denote the month and year of last interview, taken from the first in-home interview.
Marijuana	Since {MOLI}, have you tried or used marijuana? 0 no 1 yes **{0=0} {1= 1}**
Cocaine	Since {MOLI}, have you tried or used any kind of cocaine—including powder, freebase, or crack cocaine? 0 no 1 yes **{0=0} {1= 1}**
Parental Support	How close do you feel to {RESMOM NAME}? How close do you feel to {RESDAD NAME}? 1 not close at all 2 not very close 3 somewhat close 4 quite close 5 extremely close How much do you think she cares about you? How much do you think he cares about you? 1 not at all 2 very little 3 somewhat 4 quite a bit 5 very much **{3, 4,5=1} {1,2=1}**

Wave III

(15,197) 18-26 years old interviewed at home (August 2001-April 2002)

Variable	**Question**
Age	Confirm birth date. [month and year] 21.96(mean) 18(minimum) 28(maximum)
Gender	Respondent's Gender **(1) R=male (2)R= female**
Race	Are you of Hispanic or Latino origin? 0 no 1 yes What is your race? You may give more than one answer. o White o Black or African American o American Indian or Native American o Asian or Pacific Islander **{**1=White} {2= Black or African American} {3=Hispanic, American Indian or Native American, Asian or Pacific Islander}
Suicidal Ideation	During the past 12 months, did you ever seriously think about committing suicide 0 no 1 yes **{0=0} {1= 1}**
Suicidal Attempts	During the past 12 months, how many times did you actually attempt suicide 0 none 1 once 2 twice 3 3 or 4 times 4 5 or more times **{0=0} {1, 2, 3, 4=1}**
Friends' Suicide Attempt	During the past 12 months, have any of your friends tried to kill themselves? 0 no 1 yes **{0=0} {1= 1}**
Friends Suicide	Have any of them succeeded? 0 no 1 yes

	{0=0} {1= 1}
Family Suicide Attempts	Have any of your family tried to kill themselves during the past 12 months? 0 no 1 yes **{0=0} {1= 1}**
Suicide of Family	Have any of them succeeded? 0 no 1 yes **{0=0} {1= 1}**
Religious Affiliation	What is your religion? 0 none/ atheist/ agnostic 1 Protestant 2 Catholic 3 Jewish 4 Buddhist 5 Hindu 6 Moslem 7 other* 8 Christian* **{0=0} {1-8 =1}**
Religious service attendance	How often have you attended {church/synagogue/temple/mosque/religious} services in the past 12 months? 0 never 1 a few times 2 several times 3 once a month 4 2 or 3 times a month 5 once a week 6 more than once a week **{0=0} {1, 2, 3,4 =1} {5,6 =2}**
Youth religious program attendance	Many churches, synagogues, and other places of worship have special activities for teenagers—such as youth groups, Bible classes, or choir. In the past 12 months, how often did you attend such youth activities? 0 never 1 a few times 2 several times 3 once a month 4 2 or 3 times a month

	5 once a week 6 more than once a week **{0=0} {1, 2, 3,4 =1} {5,6 =2}**
Importance of religion	How important is your religious faith to you? 0 not important 1 somewhat important 2 very important 3 more important than anything else **{0=0} {1, 2, 3 =1}**
Frequency of prayer	How often do you pray privately, that is, when you're alone, in places other than a {church/ synagogue/temple/mosque/religious assembly}? 0 never 1 less than once a month 2 once a month 3 a few times a month 4 once a week 5 a few times a week 6 once a day 7 more than once a day **{0=0} {1, 2, 3 = 1} {4, 5, 6, 7 =2}**
Intrinsic Religiosity	Frequency of prayer Importance of religion Prays at least less than once a month or religious faith is at least somewhat important = 1 Never prays or religious faith is not important = 0
Extrinsic Religiosity	Religious service attendance Youth program attendance Attended religious services or attended youth programs at least a few times = 1 Never attended religious service or never attended youth programs = 0
Overall religiosity	Religious service attendance Prayer Attended religious services at least a few times or prays at least less than once a month = 1 Never attended religious service or no never prays = 0
Self-esteem	Do you agree or disagree that you like yourself just the way you are? 1 strongly agree 2 agree 3 neither agree nor disagree 4 disagree

	5 strongly disagree **{1,2,=0} {3,4,5=1}** reverse coded to take care of low self-esteem against suicide)
Depressive symptoms	You were depressed during the past seven days. 0 never or rarely 1 sometimes 2 a lot of the time 3 most of the time or all of the time **{0=0} {1, 2, 3 =1}**
Aggressive Tendencies (robbery)	In the past 12 months, how often did you go into a house or building to steal something? 0 never 1 1 or 2 times 2 3 or 4 times 3 5 or more times **{0=0} {1,2, 3=1}**
Aggressive Tendencies (Weapon threat)	In the past 12 months, how often did you use or threaten to use a weapon to get something from someone? 0 never 1 1 or 2 times 2 3 or 4 times 3 5 or more times **{0=0} {1, 2, 3 =1}**
Aggressive Tendencies (Weapon access)	In the past 12 months, how often did you carry a hand gun at school or work? 0 never 1 1 or 2 times 2 3 or 4 times 3 5 or more times **{0=0} {1,2, 3=1}**
Alcohol	Since June 1995, have you had a drink of beer, wine, or liquor more than two or three times? Do not include sips or tastes from someone else's drink. 0 no 1 yes **{0=0} {1= 1}**
Marijuana	Since June 1995, have you used marijuana? 0 no 1 yes **{0=0} {1= 1}**

Cocaine	Since June 1995, have you used any kind of cocaine—including crack, freebase, or powder? 0 no 1 yes **{0=0} {1= 1}**
Parental Support	How close do you feel to <CRMOMTXT> [Any relative (male or female; biological or non-biological) who acted as a mother to you]? How close do you feel to <CRPOPTXT> [Any relative (male or female; biological or non-biological) who acted as a father to you]? 1 extremely close 2 quite close 3 somewhat close 4 not very close 5 not close at all **{3,4,5=0} {1,2=1}** Most of the time, {HE/SHE} is warm and loving toward you? [Any relative (male or female; biological or non-biological) who acted as a mother to you]? Most of the time, {HE/SHE} is warm and loving toward you? [Any relative (male or female; biological or non-biological) who acted as a father to you]? 1 strongly agree 2 agree 3 neither agree nor disagree 4 disagree 5 strongly disagree 97 legitimate skip **{3,4,5=0} {1,2=1}**

VITA

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